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Let's Talk Tile

I've had my hands in clay since childhood, but tile-making became serious a few years ago when I was commissioned by the city of Waukesha, Wisconsin, to create a large memorial tile wall. I rolled more than 1,400 tiles and invited community members to personalize them. The two-year project was a labor of love and a meaningful way to connect with others.

In this issue, I team up with Waukesha ceramicist Codey Gallas to show you how to create your own artisan tiles, then put them to use on a colorful coffee tabletop. The possibilities throughout your home are endless—my next goal is a handmade kitchen backsplash. The secret is to have fun and always remember: Nothing is perfect, but you made it, and it's one of a kind. **—Carmen De La Paz,** Supervising Project Editor

Enter for a Chance to Win an Outdoor Fire Pit!

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Got Goofs?

Check out this hilarious reader blunder, then send us your own!

I was working on the car when my wife came out to tell me that the sink was clogged. One side of the double sink had about 4 in. of dirty water in it.

I ran the disposal, but nothing changed. Next, I grabbed a bucket and removed the trap. Again, nothing came out. Then I disconnected the disposal pipe from the trap—still nothing. I made sure the power was off, put my hand into the water and hit a hard surface: the stopper! Naturally, I grabbed it, because my wife had clearly forgotten it was in the sink. But the moment I removed it, all the dirty water rushed out right past my bucket from the pressure of the blast and ended up all over the bottom of the cabinet.

When I told my wife what happened, her face turned red! Looking back, it was my fault. I should have checked that first!

—Robert Brown, Prescott, AZ

Share your funny Great Goofs with us at FamilyHandyman.com/submissions.

COVER: TMB STUDIO; GRAPHIC BURST USED THROUGHOUT: ARTVEA/GETTY IMAGES; THIS PAGE, CLOCKWISE FROM TOP LEFT: TMB STUDIO, CENTRALITALLIANCE/GETTY IMAGES, JACLYN BROTTMAN/GETTY IMAGES

Contents

April/May 2026

Features

14 **DIY Ceramic Tiles**
Follow the complete process of making artisan tiles by hand.

20 **Tile-Top Coffee Table**
How to build a modern piece of furniture—and tile it too!

28 **What to Know About Sunrooms**
An ultimate guide to these desirable home additions.

32 **Budget-Friendly Kitchen Refresh**
Easy ways to upgrade the most important room of your house.

53 **Outdoor Living**
From backyard upgrades to simple pleasures, enjoy our best tips for living well outside.
BONUS SECTION

What's New

3 **Now Trending**
Take your bathroom from simple to spa-like.

4 **Gear Up**
Reduce waste with eco-friendly editor picks.

8 **Mini Makeovers**
Landscaping tips to give your backyard a boost.

Toolkit

41 **Best Pro Tips**
Advice for damage-free pressure-washing.

44 **Fix-It Focus**
Tackle drywall dings and installation woes.

46 **Handy Hints®**
Cleaning experts share top household hacks.

Also in this issue

1 From the Editors
50 Reader Info
51 Show & Tell

TMB STUDIO

What's New

Now Trending • Gear Up • Mini Makeovers

The latest we've heard, seen, tested and tried

NOW TRENDING

Wet Room Retreat

Combine your shower and bathtub into one fully waterproofed space to create a luxurious escape within your home. "Wet rooms give a spa-like feel that many homeowners are looking for these days," says interior designer Adriena Daunt. "A bathroom is no longer just a functional room, it's a retreat where people can stay in the space longer and relax." —**Erica Young**

JESSICA BRYDSON PHOTOGRAPHY

Eco-Friendly Faves

These sustainable swaps make it easy to cut waste, save money and protect the planet

Second-Chance Patio Set

As someone who shops for a living, every so often I get my hands on something that really wows me. My Polywood dining set is one such item.

I first saw Polywood furniture at my neighbor's house. I was impressed by how sturdy it felt, and I couldn't believe it still looked new after three years of harsh New England winters and summer sun. Polywood sets are made in the United States from high-density polyethylene plastic "lumber." The material is durable and weather resistant, and it is produced from recycled and reusable plastics in a 99% waste-free process. The finished pieces then last for decades, and when it's time to retire them, they can be recycled again.

I chose the Lakeside six-piece dining set for my deck. It's the perfect size for my large family and has become our main table for meals, games and hanging out until the weather gets too cold. That's how much I love it!

Polywood has a 20-year warranty against splintering, cracks, chips, peeling and rot. With that commitment to quality in mind, I opted for upgrades like trestle legs and the brand's Wirebrush finish, which mimics wood and hides scratches. My only complaint is that debris can get stuck in the tiny grooves. A sponge or cloth doesn't do the trick, but a small dish brush and soap make it look good as new. —**Marisa Hillman,** shopping editor

Polywood Lakeside Farmhouse Dining Set, $1,695 as shown; polywood.com

VIA AMAZON FOR POLYWOOD

Wipe, Wash, Repeat

Paper towels make up most of my weekly trash and are among the most expensive items on my grocery bill. So when I learned about Grove Co.'s reusable "paper" towels (also called "paperless" towels), I put my regular ones away for a week and gave them a try.

I tested two rolls in cute, stain-hiding prints. The 100% organic cotton flannel is supersoft, and the towels come with a thick, reusable cardboard "roll" that fits most paper towel holders for grab-and-go convenience.

The most important test, of course, is how well they handle spills, and these didn't disappoint. The sheets felt sturdy and readily soaked up messes as well as a typical two-ply paper towel does. I actually prefer them now for kitchen and coffee bar cleanup. Being able to toss them in the wash with the rest of my laundry is the cherry on top. **—Emily Way,** shopping editor *Grove Co. Reusable "Paper" Towels, $30; Grove.co*

CLOCKWISE FROM TOP LEFT: VIA GROVE CO., VIA YETI, VIA THE GADGET FLOW FOR ALMOND COW, EMILY WAY FOR TASTE OF HOME

Water Bottle for a Lifetime

Over the years, *Family Handyman* editors have tested dozens of reusable water bottles with a wide range of features and accessories. Among them all, our top pick is Yeti's Rambler bottle. True to Yeti's reputation, the Rambler can keep iced drinks cold for days, holds scorching heat with double-wall vacuum insulation, and stands up to drops.

The Rambler comes in five sizes—18, 26, 36, 46 and 64 oz.—so it works for everyone from gym fanatics to all-day sippers. You can also choose from five leakproof lids; our favorites are the straw cap and the magnetic MagDock twist cap, which stays with your lid as you drink. With a wide selection of core and seasonal colors, it's easy to find one that fits your style. "The supersize 64-oz. Rambler is what I like to call my 'emotional support water bottle,'" says Senior Shopping Editor Caroline Lubinsky. "The insulation keeps drinks cold and ice intact for hours, even on hot days."

Senior Shopping Editor Daria Smith is equally sold. "The 26-oz. is my everyday water bottle, and I also own the 36-oz. and 46-oz. sizes," she says. "These bottles are 100% spill-proof. I always throw them in a soft cooler to go to the beach—you can never be too hydrated in the sun." For even more convenience, Yeti offers accessories that allow you to attach the bottle directly to a Yeti cooler. No matter your routine, the Rambler is a durable, stylish and reliable option you can count on. **—Emily Way, shopping editor** *Yeti Rambler Water Bottle, starting at $32; Ace Hardware, Dick's Sporting Goods, Tractor Supply Co.*

Save Money on Your Morning Latte

After cutting back my dairy intake, I was so excited to discover the Milk Maker from Almond Cow. This countertop machine whips up homemade vegan milk from any nut, grain or seed—almonds, oats, coconut and more—in just 60 seconds, with no added sugar or sweetener. It also dramatically cuts down on single-use cartons, which can pile up fast if you regularly buy plant-based milks.

The Milk Maker is pricey, but it quickly pays for itself. A 2-lb. bag of almonds from Sam's Club costs about $9 and makes nearly 20 large jugs of almond milk—about $80 worth at the grocery store. Plus, the process uses no additives or preservatives, and the appliance takes up less kitchen real estate than a few store-bought cartons.

After getting the hang of it, I tried making pecan pie milk with raw pecans, cinnamon, sea salt and maple syrup. It's officially my new favorite coffee creamer! **—Bryce Gruber,** gift and shopping expert *Almond Cow The Milk Maker, $275; Amazon, Target, Williams-Sonoma*

No More Moldy Berries

Keeping fresh fruits and veggies in my fridge is a top kitchen priority, but they often spoil in the crisper before my family can eat them. That's why I was thrilled to try the adorably packaged Bluapple.

This apple-shaped container holds compostable packets that absorb ethylene, a naturally occurring gas released by produce as it ripens. Ethylene can make sensitive foods such as berries, lettuce and cucumbers spoil prematurely, leaving you with a moldy disappointment.

To test, I placed the Bluapple on a lower door shelf. With the door closed, it sat next to a crisper full of nectarines, which are major ethylene producers. Then I put a box of ethylene-sensitive strawberries on the same shelf. After eight days, the nectarines were still fresh and juicy, and the strawberries looked as good as they did on day one. Everything lasted longer than I expected, enough for the Bluapple to pay for itself after preserving a few cartons of strawberries.

After about three months, all you need to do is pop in new packets to enjoy weeks of extra shelf life all year round. —**Bryce Gruber**, gift and shopping expert *Bluapple Classic 2-Pack Produce Saver, $17; Amazon*

Is the Grass Really Greener?

Reel mowers are making a comeback among eco-conscious homeowners. They don't produce emissions like gas mowers, they're ultra quiet, and they slice grass cleanly to promote a healthy lawn.

I took the Earthwise reel mower for a spin in my backyard, where I've tested over 30 mowers. The first push took some effort, but momentum soon carried it across the yard. The straight handlebar made it a lot easier to stay on track than the T-shaped handles of other mowers I've tried. There isn't a good option for bagging clippings, but that was OK—I often prefer letting clippings return nutrients to a lawn.

At 18 in. wide, the Earthwise mower is great choice for people with smaller lawns. Putting in a little elbow grease provides a sense of pride in your yard that a pricey machine or landscaper can't match. —**Tyler Graham**, lawn care and lawn tool enthusiast *Earthwise 18-In. 5-Blade Economy Reel Mower, $225; Amazon*

Stackable Food Storage

It sure stinks when newly purchased produce spoils ahead of its time. But with a sea of produce keepers to choose from, finding the best one can be tricky. I scoured online reviews and tested top contenders against DIY storage methods, and Lille Home's Stackable Produce Saver Bins stood out as the best option for tight fridge spaces.

These compact, BPA-free bins stack easily, don't retain odors and are dishwasher safe. Airtight seals with optional vents create a climate-controlled environment that keeps small fruits and vegetables such as berries and cherry tomatoes fresher for longer in your fridge. In testing, the bins kept both greens and grapes fresh for more than 10 days.

One of my favorite features is the removable colander that doubles as a berry bin. And between the small size and the airtight seal, these bins work great in the pantry too. —**Emily Way**, shopping editor *Lille Home Stackable Produce Saver Bins (set of 3), $30; Amazon*

CLOCKWISE FROM TOP LEFT: VIA THE BLUAPPLE, VIA AMAZON FOR EARTHWISE, VIA LILLE HOME, VIA HOWARDS STORAGE WORLD FOR THE BLUAPPLE

Kick Plastic Wrap to the Curb

My kitchen pet peeve is having to wrestle with plastic wrap. When it sticks to itself or won't tear off cleanly, I wind up reaching for a food storage bag instead, and my plastic waste grows. Stasher's silicone stretch lids promise a reusable, no-hassle alternative.

The round, thin silicone covers have a lip that stretches over bowls, pans, opened cans and even the cut edges of fruit. Like plastic wrap, they create an airtight seal to keep leftovers fresh.

After unboxing the lids, I stretched them to check their strength and found them to be pleasantly pliable, but the first real test came with a leftover salad. Instead of grabbing a bag, I simply pulled the largest Stasher lid over the bowl. It had a nice amount of stretch while still hugging the bowl tightly. I even flipped the bowl upside down without any spills.

The lids are microwave safe and hold up well on the top rack of the dishwasher. In the month I've had them, I've used the lids on nearly every bowl, jar, cup and can in my kitchen. Consider me a silicone lid convert! —**Emily Way,** shopping editor *Stasher Stretch Lids 4-Pack, $20; Amazon, Walmart*

Perfectly Imperfect Produce

Misfits Market is a grocery, produce and home goods delivery service devoted to ethical, sustainable products. Their "misfit" fruits and veggies are discounted up to 30% from typical supermarket prices because of minor cosmetic flaws. Grocery stores struggle to sell produce that has color or size inconsistencies, but it tastes just as good. My family of seven happily ate our way through fresh melon, bell peppers, a variety of salad greens and the best organic blackberries I've ever tasted.

Getting started is easy. A quick quiz helps you choose your delivery frequency and the types of produce you want in your box. Misfits Market will start your cart with curated grocery picks and then you can fully customize it from a 700-plus-item online marketplace. Then all you have to do is pick a delivery day and time window, and bam! Healthy eats appear on your doorstep. —**Bryce Gruber,** gift and shopping expert *Misfits Market, $15 minimum per box (varies by location); misfitsmarket.com* ●

CLOCKWISE FROM TOP LEFT: VIA STASHER, YUL38885 YUL38885/GETTY IMAGES, VIA MISFITS MARKET

Go Organic Outdoors

Dealing with weeds is an inevitable part of yard care. Hand-pulling is great for taking care of a few strays, but it can quickly become a losing battle once a jungle of weeds takes over. In those instances, it's often easier and more efficient to reach for a reliable weed killer.

Many traditional products, however, rely on harsh ingredients such as glyphosate, which can pose short- and long-term health risks and reduce biodiversity in your backyard and beyond. If you're ready to switch to an organic weed killer that's safer for the environment, your family and your pets, we've got you covered. With guidance from a lawn care expert, we curated a lineup of five nontoxic favorites made with essential oils, salt, vinegar and other green ingredients.

Naturally Tough

Head to our website to see our five favorite organic weed killers.

Landscape Upgrades

From pruning to planting, these easy outdoor improvements make your yard more beautiful while keeping maintenance manageable

KARAMYSH/GETTY IMAGES

TRIM IT

How to Prune a Tree

With the right tools and techniques, you'll get the job done safely and keep your tree healthy and strong

BY CARMEN DE LA PAZ

Before you begin pruning, it's important to understand how all the parts of a tree work together.

The trunk, also known as the central leader or main stem, runs water between the roots and the leaves and provides the tree's core strength.

The bigger, thicker branches form the tree's framework. When you're pruning, remove as little as possible from the framework. Keep in mind that the goal of pruning is to maintain a natural, balanced shape and good flow. Professional tree trimmers, known as arborists, strive to maintain a natural shape by leaving properly spaced branches spiraling up the trunk. And there's one bedrock rule: Never just lop off the top without considering the overall look and health of the tree!

The following tips will help you approach pruning strategically, using the appropriate tools and making only essential cuts while keeping your tree healthy and attractive.

1 PRUNE FROM THE GROUND UP

Using bypass pruners, start by cutting any small suckers growing from the base of the tree, the trunk or the roots. Suckers are vigorous shoots that often indicate the tree is under stress. Besides being unattractive, they compete with the tree for water and nutrients and should be removed.

2 CUT DEAD, DISEASED AND BROKEN BRANCHES

As you work your way up the trunk, identify all branches that "must go"—ones that are obviously dead, broken or diseased. Work your way from the bottom up as high as you can go comfortably and safely without a ladder. This is where battery-operated shears with an extendable pole truly come in handy.

3 THIN OUT THE CANOPY

Water sprouts (the stems that sprout and grow vertically from major branches) can divert energy from the rest of the tree. They eventually rub and damage branches and ruin the tree's appearance. Look for and remove some of the water sprouts, but don't remove them all at once—doing so can result in even more sprouts.

Next, look for and remove any crossing branches that might eventually rub on and damage branches you intend to keep. These branches can also block light from healthy branches.

Never cut more than 25% of the total branches in the tree. For an easy estimate, remove no more than one out of every four to five branches. Focus on removing those with a narrow angle between the trunk and branch, and keep those with a strong, wide angle. The goal is to create a strong framework with room for growth. Loppers, battery-operated shears or a handsaw will all work for this step.

4 CUT LARGE BRANCHES ABOVE THE COLLAR

When you're identifying larger and more mature branches to be cut, look for a slightly swollen bulge where the branch connects to the trunk—called the branch collar—and cut just outside it, leaving the branch collar intact. Never cut off a branch collar, and never cut a branch flush to the trunk.

You can think of a branch collar as if it's a turtleneck that protects the tree. Protective chemicals that help prevent decay from moving into the trunk are concentrated near branch collars. Preserving the branch collar reduces the size of the pruning cut and encourages faster wound closure.

TMB STUDIO

GEAR UP

Your Pruning Toolkit

Arm yourself with the right tools for clean cuts, a safer reach and healthier trees

1. Bypass Hand Pruner

Most gardeners prefer a bypass pruner over an anvil pruner because it has an upper curved blade that passes next to the lower blade, resulting in a cleaner cut. Use a bypass hand pruner for branches up to ¾ in. thick.

2. Bypass Lopper

Essentially a bypass pruner but with long handles and bigger blades, a lopper works best for branches up to 2½ in. thick. With the leverage of the long handles, you can cut through a thick branch in a single squeeze.

3. Pruning Saw

A saw is helpful for pruning branches up to 5 in. thick. It's a solid choice if you need to prune from a ladder because it can cut on the pull stroke. That way, you're not pushing your body away from the tree and risking a fall.

4. Battery-Operated Pruning Shears

Many battery-operated pruning shears come with extendable pole attachments (or have compatible poles sold separately) for higher and hard-to-reach areas. These useful tools are surprisingly strong and can handle 1-to-1½-in.-thick branches.

5. Long Pole Pruner

Ideal for reaching dead and broken branches that are 1 to 2 in. thick, a long pole pruner eliminates the need for a ladder. Most have an extendable handle and two cutting options. Jameson's Hollow Core Tree Trimming Kit, shown above, includes both a 13-in. saw blade and a heavy-duty pulley-operated pruner.

1-4: TMB STUDIO, 5: VIA JAMESON TOOLS

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LAY IT

Master Mulch

Put an extra layer on your garden to retain water, stop erosion and insulate plant roots. Here are some of the most common materials—choose the one with the biggest benefits for your yard.

Cocoa Bean Hulls

A useful byproduct of the chocolate industry, cocoa bean hulls work well in a variety of landscaping styles and don't compact over time. Use a 1-in. layer to help suppress weeds. If you have dogs, find another option—just like chocolate, the hulls are toxic for them.

Evergreen Needles

If you have conifers on your property, the fallen needles make excellent mulch. Rake out the excess from under the tree and transfer a 1-to-2-in. layer to your beds. Contrary to popular belief, evergreen needles do not make soils more acidic.

Wood Chips

Wood chips come in many forms, stay in place in windy conditions and can be very inexpensive. Ask your local municipality or utility company—it may give chips away for free. Pile on a 3-in. layer for weed-fighting benefits.

Autumn Leaves

For a quick way to put nutrients back into your beds, use your fallen leaves. Shred them with a lawn mower and use a 1-to-3-in. layer. Leaves may blow away, so consider taking the time to create a simple leaf compost for better results.

Bark Chunks

Look for medium and large chunks for the base of trees and shrubs. Bark is very attractive, comes in many colors and offers excellent weed resistance. Just keep the bark a few inches away from plant crowns and buildings to prevent damage from ants and rodents.

Rock or Gravel

Great for plants that need lots of drainage, rock or gravel is an attractive option that requires little maintenance. The downside: Unlike organic mulches, these materials don't improve the soil structure, add nutrients or regulate temperatures.

HULLS, CHIPS, LEAVES, GRAVEL: RDA/GID; NEEDLES: ANTONSOV85/SHUTTERSTOCK; CHUNKS: BURGUA/SHUTTERSTOCK

PLANT IT

4 Flowering Shrubs

These summer-blooming specimens add color and texture to your landscape while attracting hummingbirds and butterflies all season long

1. Spirea

***Spiraea*, Zones 3 to 8**

For an easy-to-grow summer flowering shrub that does best in full sun with exciting color, look for a spirea at the garden center. Spireas provide several seasons of interest, but it's the summer blooms that are truly impressive. While the individual flowers are tiny, together they pack a punch. Be sure to choose a cultivar that's right for your space—some grow only 18 in. tall, while others can grow to several feet.

2. Mock Orange

***Philadelphus*, Zones 3 to 8**

Once you see mock orange, you've got to have it. In early summer, these flowering shrubs bear gorgeous pure-white flowers that last for weeks and smell delicious. Most grow up to 6 ft. tall, but you can also find compact or dwarf varieties. Grow this shrub in full sun.

3. Crape Myrtle

***Lagerstroemia indica*, Zones 7 to 9**

Crape myrtle is a year-round favorite in the South, where it thrives in the warmth and blooms from July to September. The spectacular flowers are a magnet for butterflies, bees and hummingbirds. You can even remove the first wave of flowers to encourage a second bloom. Grow this heat-tolerant beauty in full sun, and it might get to be 10 ft. or more.

4. Viburnum

***Viburnum*, Zones 2 to 9**

Among the most popular of ornamental shrubs and small trees, viburnum is sought after for three reasons: It's handsome, it's versatile and it's easy to grow. Truly a year-round shrub, it rewards you with flowers in spring or summer, appealing foliage in fall and berries from fall to winter. Grow in full sun or part shade. ●

Know Your Zone

Understanding your plant hardiness zone makes it easier to choose plants that will thrive in your area. Visit our website to find yours.

1: RANDIMAL/GETTY IMAGES, 2-4: WWW.PROVENWINNERS.COM

A BEGINNER'S GUIDE TO Handmade Tiles

Learn how to achieve an artisan look with approachable techniques and materials

BY CARMEN DE LA PAZ

One of the first rules of working with clay is to expect a few surprises along the way. Even when you carefully knead out air pockets, roll and measure your tiles, fire the kiln just right and follow a consistent process, tiles can curl as they dry, warp or break in the kiln, or emerge a different color than expected after glazing. But those variations are normal. In fact, they're the signature of something handmade.

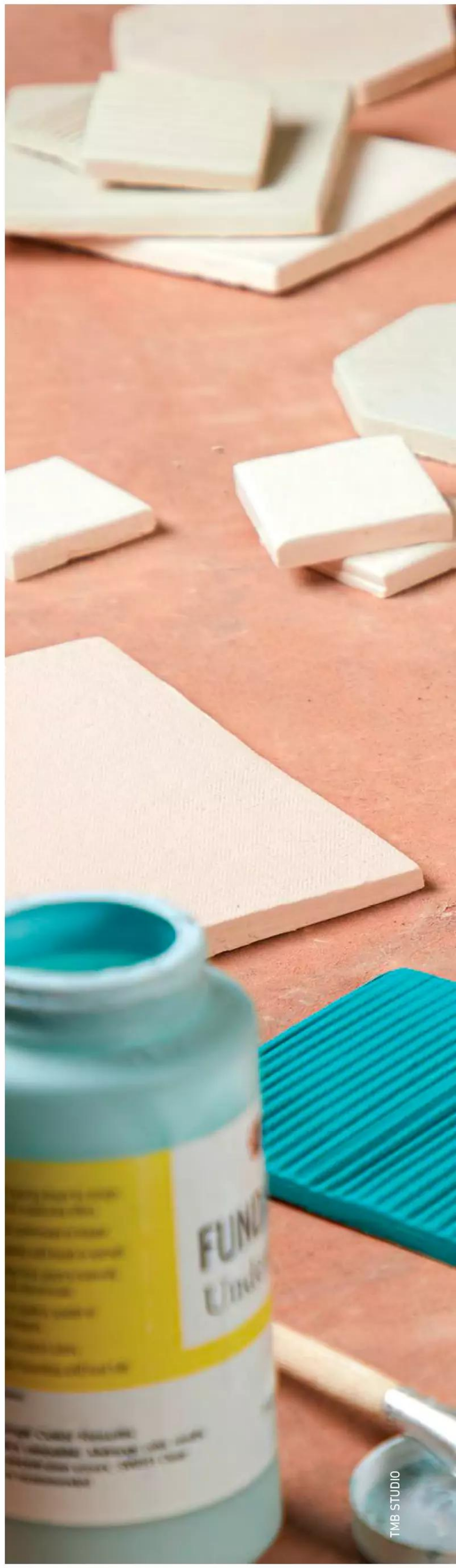
With patience, practice and a little willingness to experiment, you'll start to understand how clay behaves and how to work with it, not against it. Remember: The challenge is half the fun, and the

What It Takes

Time	Cost	Skill Level
Multiple Days	$100-$500	Beginner

Tools

- Brushes or sprayer for ceramic glaze
- Cutting wire or tool
- File or sandpaper
- Kiln (see page 16)
- Rolling pin or slab roller
- Textured stencil or silicone mat
- Textured wood roller
- Tile plunge cutter



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Many pottery studios offer firing services for community members. Here, ceramicist Codey Gallas hands Carmen a glazed tile straight from the kiln at South High School in Waukesha, Wisconsin.

reward is a set of one-of-a-kind tiles tailored to your taste.

Ceramic tile can be used throughout your home, but you don't have to tackle a full room or backsplash right away. For an approachable way to build confidence in your technique, start with a smaller project such as our colorful tile-top coffee table on page 20.

Getting Started with Ceramics

If this is your first ceramics project, fear not—working with clay is a continuous learning process. To help guide beginners, I consulted Codey Gallas, an award-winning sculptural ceramicist and artist educator at South High School in Waukesha, Wisconsin.

Gallas emphasizes the welcoming nature of the pottery community: "Ask questions, start slow and do tests. There are numerous Facebook groups, pottery shops, high school teachers and college professors who would be happy to help with any project. We in the ceramics field are a welcoming group who love to help others."

He also recommends starting with small test batches rather than immediately firing tons of tiles for a major project: "It's better to do a few small firings before you fill the kiln. With time and a couple of firings under your belt, you will be confident knowing what you put in will come out how you want it to."

Purchasing Clay

For this project, purchase a mid-range stoneware clay with grog. Grog is finely ground, previously fired ceramic material added to raw clay to improve strength and stability. It helps reduce shrinkage, speeds drying and prevents cracking. This type of clay is ideal for hand-building, including creating large sculptures and tiles.

Gallas suggests avoiding earthenware clay: "Earthenware is not vitrified when glazed and fired, meaning it will hold and retain water. That would wreak havoc if used for a table or backsplash," he says.

Finding a Kiln

Most pottery studios offer kiln sessions for a reasonable cost. Contact your nearest pottery studio to inquire about fees and scheduling.

It's possible to make ceramic tiles without a kiln, but there are significant trade-offs. Air-dry clay, commonly used for simple crafts, can be formed into tiles, but it isn't food-safe or waterproof. Traditional clay can be fired in outdoor setups such as a woodstove, fire pit or fireplace, but temperature control is difficult. These methods also rarely reach the 1,800 degrees F and higher temperatures needed to create true ceramic hardness, also known as vitrification.

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1 **SECTION OFF A WORKABLE PIECE**
Open your bag of clay and cut a ¾-to-1-in.-thick slice off the block with a clay-cutting wire or tool.

Knead and compress the clay to remove air bubbles. Air pockets left in the clay may damage the tiles when they're fired in the kiln.

2 **ROLL OUT THE CLAY**
Roll out the wet clay into a ⅜-in. slab using a slab roller or a rolling pin with ⅜-in. wood guides to ensure an even thickness. Use a canvas cloth to protect the clay from getting all over the rolling pin or slab roller.

3 **CUT THE TILE**
Cut the rolled clay slab into your preferred shape with a tile plunge cutter. Plunge cutters for clay come in many shapes and sizes and work like cookie cutters: Press the metal edges through the clay slab, then release the shape from the cutter by pressing down on the plunger.

4 **CLEAN UP THE EDGES**
Once you've popped the clay out of the plunge cutter, you may find imperfections

Materials

- Canvas cloth
- Ceramic glaze
- Cleaning sponges
- Scrap wood piece
- Stoneware clay with grog

from the edges curling or sticking to the side of the cutter. This is inevitable but very easy to fix.

Use a small piece of wood to help straighten and reshape any sides of the tile. Rub your finger along the edges to smooth and round over rolled-up edges. Clay is very forgiving; work the shape until you're satisfied with it.

NOTE: Tiles from smaller plunge cutters, such as 2-in. squares or diamonds, have a higher tendency to deform as they're being cut.

5 ADD A TEXTURE OR PATTERN (OPTIONAL)

You can add a texture or pattern to your tiles using a stencil, silicone mat or a wood roller.

Texture with a stencil or silicone mat: When you roll out the tile with a rolling pin or slab roller, place the stencil or silicone mat directly on the clay, lay the canvas over it and roll it out again.

You will need to test the first few passes to determine the optimal pressure required to imprint the design of the stencil or silicone mat. Clean the stencil or silicone mat after each roll to prevent it from becoming clogged with wet clay and to keep your pattern crisp.

Texture with a wood roller: When using a wood roller to imprint a tile with texture, first roll the clay through the slab roller to get an even thickness. Use a plunge cutter for the desired shape. Then roll the texture into your tile. Be sure to maintain even pressure as you roll it over the wet clay.

Your clay tiles may distort slightly as you roll the texture on; to refine the shape, use the plunge cutter again, being careful not to press down too hard on the plunger and potentially flatten the texture/pattern. Do a few test rolls until you find the right balance between pressure and reforming the tile.

6 LET THE TILES DRY

Allow the tiles to air-dry for five to seven days until they are "bone dry" and the clay has lost all its moisture. This process can take shorter or longer based on the humidity in your region. Bone-dry tiles will be lighter in color, weigh less, and feel room temperature—not cold and damp to the touch.

Clay tiles tend to curl as they dry. To prevent this, place a flat object on top of the wet tiles with a bit of weight or pressure. Not so much weight that it squishes and flattens the tiles, but enough to keep them from curling as they dry. Ensure that air can circulate around them as they dry. Because clay also shrinks as it dries, you may notice slight imperfections or unevenness from tile to tile.

7 BISQUE-FIRE

Your tiles will need two firings in

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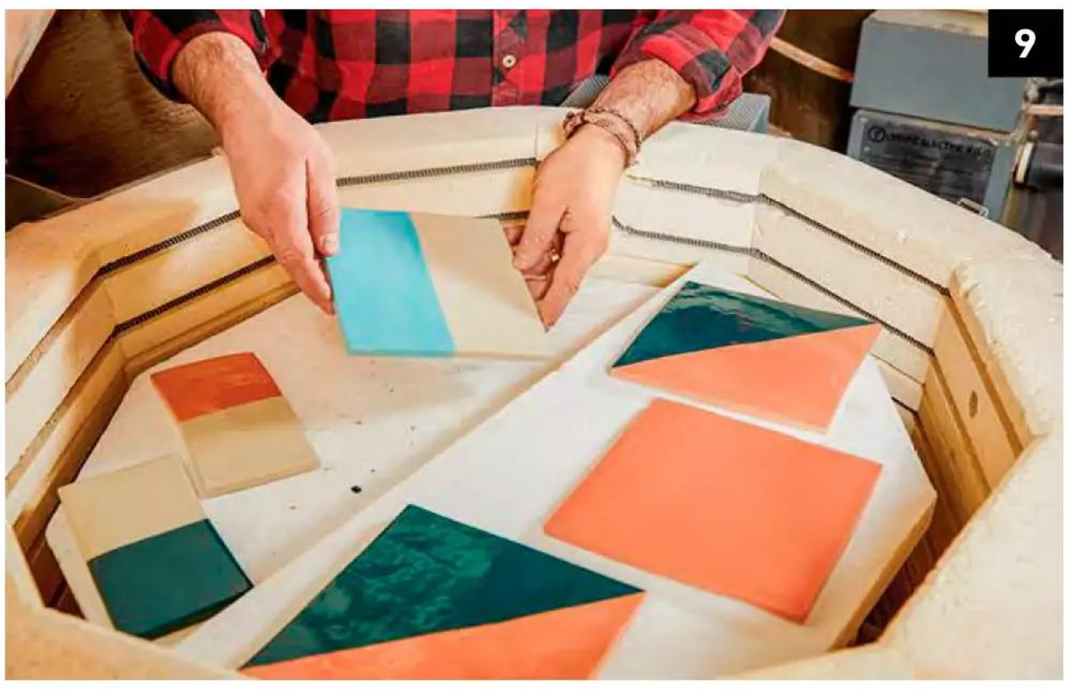


the kiln. Bisque firing is the initial lower-temperature firing that essentially bakes out all the water in the clay, leaving it permanent and durable for handling, but still porous for glazing. Each firing takes about 24 hours to complete, including the time to return to a working temperature.

Check the packaging of your clay for the recommended firing range; we bisque-fired our mid-range stoneware clay at the middle of the suggested range.

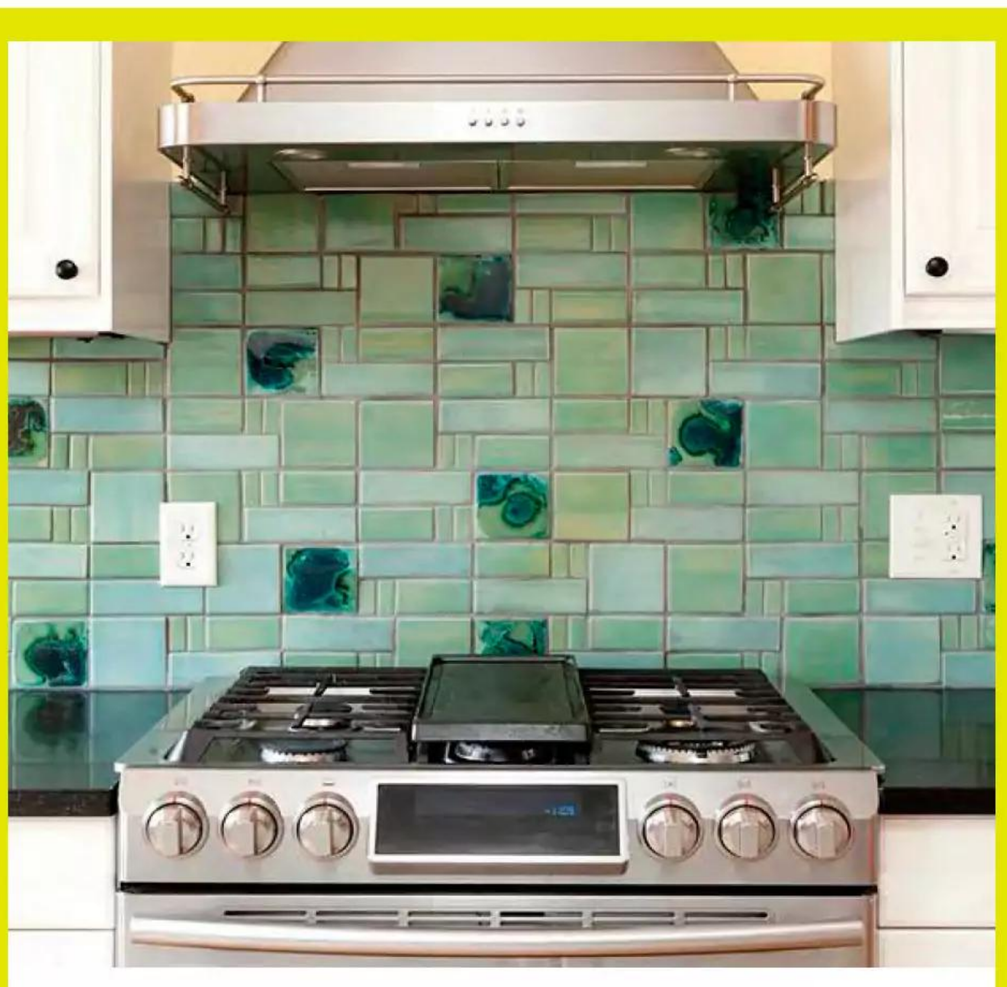
8 APPLY THE GLAZE
Once the tiles have been bisque-fired, apply the glaze. Brush or spray the glaze onto each tile's face and edges, building up layers to ensure solid coverage.

When the glaze has set, use a wet sponge to wipe away any drips that have dried on the bottom of the tiles. This will prevent the tiles from sticking to the interior of the kiln.

9 GLAZE-FIRE
Place your glazed tiles in the kiln and fire at the setting recommended for the glaze being used (not for the type of clay, as was the case for the bisque firing).

Let the tiles cool fully and remove them from the kiln. Some of the glazed edges may be very sharp and could require light sanding or filing. Then your tiles are ready to install. ●

TMB STUDIO, SIDEBAR: VIA CLAY SQUARED



Prefer Ready-Made Tile?

If you love the look of handmade tile but don't want to shape, glaze or fire it yourself, you have options. It's possible to get the character and natural variation of artisan tiles without ever touching clay or firing a kiln.

Start with local pottery studios, craft schools or artisan markets. Many can connect you with ceramic artists who sell tiles directly or take custom orders. Visiting a showroom lets you compare styles and see textures, colors and finishes up close. Nothing suitable nearby? Some studios, such as Minneapolis-based Clay Squared to Infinity, offer free catalogs and online inventories so you can shop from anywhere.

For a wider selection, check online artisan and specialty tile vendors such as Clé Tile, Fireclay Tile and Zia Tile. Note lead times and order samples before committing, and check return policies for larger orders—you'll want extra tiles on hand to account for size or color variations.

If availability, price and ease of installation matter the most, try handmade-look tiles from a home center. These mimic the qualities of handmade versions but are more affordable and uniform, and easier to match later.

Clay Squared to Infinity's Andromeda Cosmic Cloud tiles, made by tile artist Josh Blanc, feature three layered glazes. Combined with smaller field tiles in matching colors, they create eye-catching accents in the studio's Aquila pattern (top of page).

What It Takes

Time	Cost	Skill Level
Multiple days	$100-$500	Intermediate

Tools

- ¼" drill bit
- 4' T-square
- 90-degree angle jig
- Angle grinder with masonry blade
- Artist paintbrush
- Clamps
- Countersink drill bit
- Dowel centers
- Drill
- Furniture pad or blanket
- Mallet
- Measuring tape
- Miter saw
- Paintbrush
- Palm sander
- Router with straight-cut bit
- Table saw
- Tile float
- Vacuum

TMB STUDIO

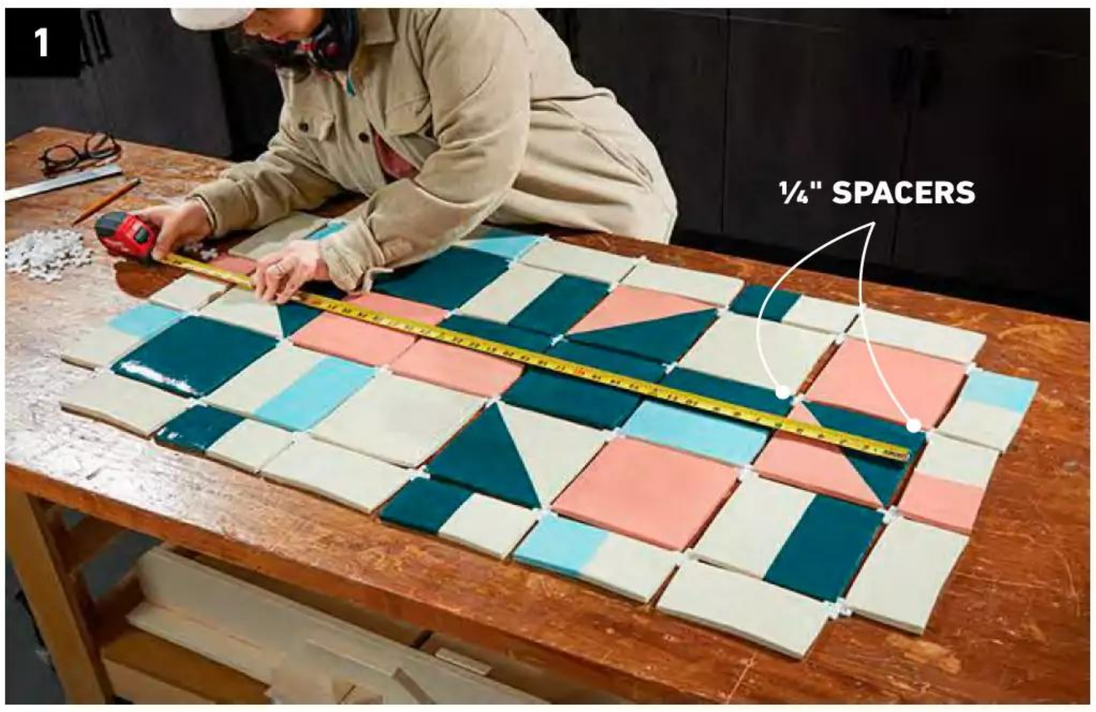
Tile-Top Coffee Table

Flex your tiling skills with a mixed-material project that brings a pop of color to your home

BY CARMEN DE LA PAZ

I've been making tiles for years, literally crafting thousands for all kinds of projects. This time, I wanted to showcase them on a colorful coffee tabletop. From the start, I knew the challenge would be working with the organic imperfections that come with handmade tile. If you've made clay tiles before (see page 14 for the full process), you know there are bound to be few surprises when they come out of the kiln.

Rather than fight these variations, I decided to let them shine, embracing the artisanal, rustic feel of handmade work. I am happy to share the steps for this versatile table, and I hope it inspires you to celebrate the little imperfections that make every project unique.

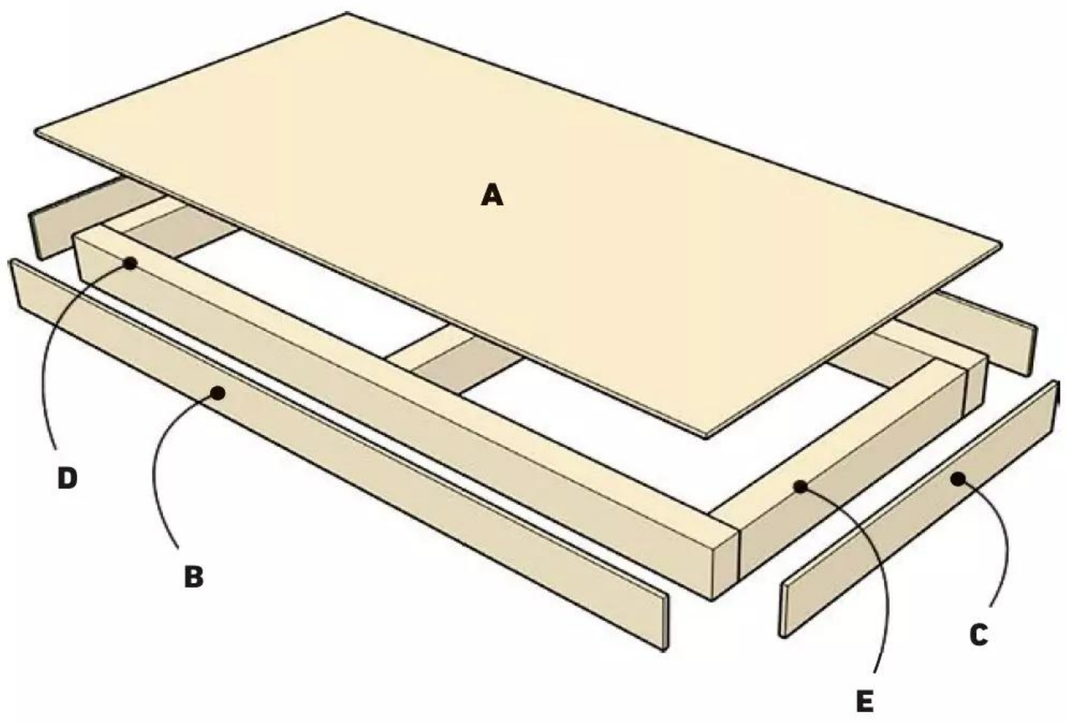


1 CALCULATE TABLETOP DIMENSIONS

To get started, lay out your tiles with ¼-in. tile spacers to determine the size of your tabletop understructure. Your calculations will work from the tile layer in: The size of your tile layout determines the size of the backer board layer, which in turn determines the size of the wood frame to which the backer board is adhered.

NOTE: Handmade tiles won't all be exactly the same size or shape, so be prepared to accommodate some variation. If perfect grout lines and uniform tiles are a priority, consider purchasing premade tiles (find shopping suggestions on page 19).

Figure A
Tabletop Overview



Cuts

Key	Qty.	Dimensions	Part	Material
A	1	¼" x 18" x 37¼"	Backer board top	Cement board
B	2	¼" x 2½" x 37¼"	Backer board long side	Cement board
C	2	¼" x 2½" x 17½"	Backer board short side	Cement board
D	2	1½" x 2½" x 36¾"	Long framing	2x4
E	3	1½" x 2½" x 14½"	Short framing	2x4
F	4	1¾" x 1¾" x 14¾"	Upright	Ash
G	4	1¾" x 1¾" x 8¼"	Outrigger	Ash
H	6	1¾" x 1¾" x 15½"	Cross brace	Ash
J	2	1¾" x 1¾" x 16¼"	Stretcher	Ash

2 CUT THE BACKER BOARD

Using a large T-square and a pencil, draw the measurements for the backer board top (A), long side (B) and short side (C) on the backer board. Use an angle grinder with a masonry blade to cut the pieces.

3 CUT AND ASSEMBLE THE TABLETOP FRAMING

The backer board top (A) should be ½ in. wider and longer than the wood frame it's attached to, leaving a ¼-in. overhang all around. This ensures that the backer board sides (B and C) tuck in under the top and leave a clean edge for the tile to attach to.

Cut the long (D) and short (E) framing components to length at the miter saw, then rip them to 2½ in. wide at the table saw. The 2½-in.-wide framing components accommodate the width of the side tiles while still leaving room for mastic and grout to create a clean edge. Screw the long (D) and short (E) framing components together using 2½-in. screws.

Materials

Item	Qty.
¼" tile spacers	
¼" wood dowels	
¼" x 3' x 5' backer board	
1¼" backer board screws	
¾ x 6" x 10' ash	1
2x4 x 10'	1
2½" wood screws	
3" wood screws	
3" x 6" ceramic tiles	
6" x 6" ceramic tiles	
Assorted sandpaper	
Clean shop rags	
Sanded grout	
Scrap wood	
Sponge	
Tile mastic	
Tung oil	
Wood glue	

4 ATTACH THE BACKER BOARD TO THE FRAME

Secure the backer board top (A) and sides (B and C) to the framing components (D and E) with 1¼-in. backer board screws, starting with the backer board sides (B and C). Due to the ¼-in. overhang on each side of the top (A), the sides (B and C)

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should finish flush to the outside edge. Space the backer board screws 6 to 9 in. apart. To prevent splintering, do not install screws within ¾ in. of the backer board's edges.

5 ATTACH THE TILES TO THE TABLETOP

Use a ¼-in. notched trowel to evenly spread mastic over the backer board top (A). Hold the trowel at a consistent, steep angle (about 45 degrees) as you pull it across the surface to capture the maximum peak of the notches.

Transfer your tile layout to the mastic-covered backer board top (A). Use a long straightedge and ¼-in. tile spacers to keep your layout as evenly spaced as possible. To ensure full contact between the mastic and the back of the tile, nestle the tiles into the mastic as you lay them into place. If your handmade tiles have a curve that prevents them from making full contact with the mastic, apply more mastic to the back of the tile to ensure complete support. This is called "back-buttering" the tile. The goal is to prevent voids between the tile, mastic and backer board because they increase the likelihood of the tile cracking under stress or excess weight.

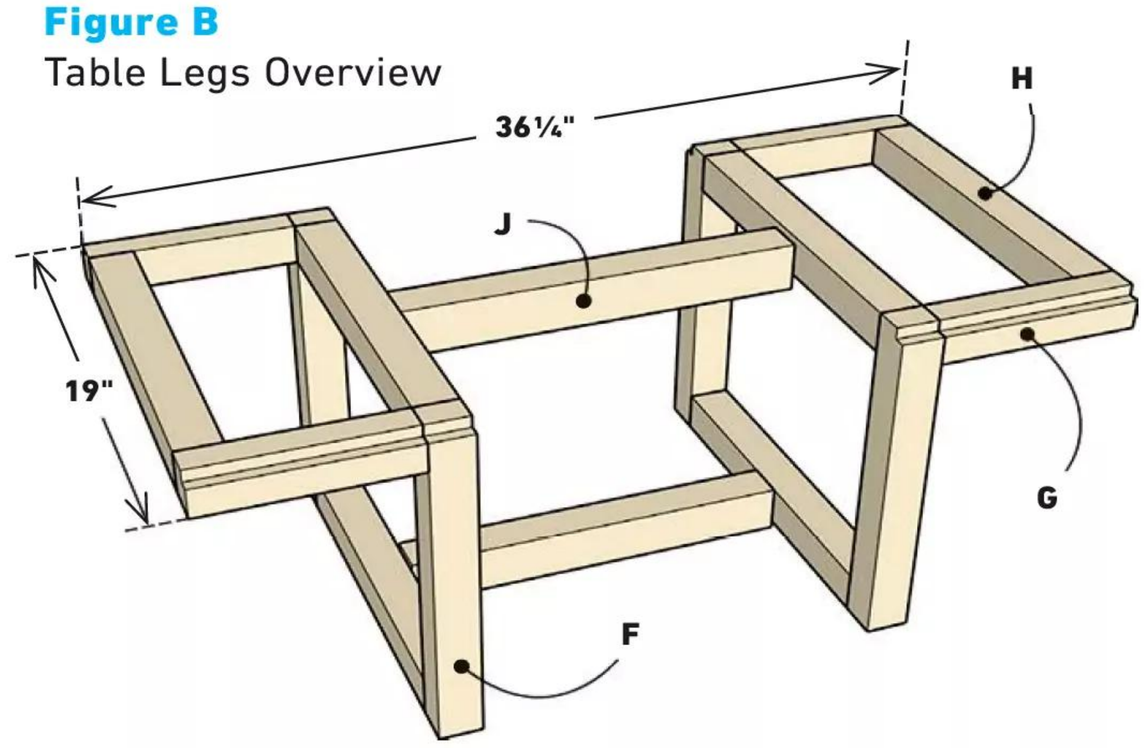
Once the top is complete, let it set up overnight. If you have to back-butter multiple tiles, give it two days to ensure the mastic has hardened. Move on to the backer board sides (B and C) only after the top tiles are secure, as you may need to use tape to hold the edge tiles in place while their mastic dries.

Once the edge tiles are attached, let the mastic dry and harden for another 24 hours before proceeding to the grouting stage. During this time, make the legs.

6 CUT THE WOOD FOR THE LEGS

Use a miter saw and a table saw to cut the table leg pieces (F-J) to the dimensions in the cuts list. All the leg components are cut from the same 1¾-in.-square stock, so label them as you go to keep

Figure B
Table Legs Overview



each upright (F), outrigger (G), cross brace (H) and stretcher (J) in order for assembly.

7 ASSEMBLE THE LEGS WITH DOWELS

The table legs (see Figure B) are assembled with doweled butt joints. To ensure the doweled joints line up correctly, use dowel centers. This process will take time and requires some prototyping and practice if you haven't built with dowel joinery before.

To create a joint using dowel centers:

- Drill two ¼-in. holes, a little deeper than half the length of your dowels, on one of the two pieces you will be joining. If you are not confident about drilling these holes straight, use a drill press.
- Place the dowel centers in the drilled ¼-in. holes.
- Bring the second piece you are joining into position so the sides are aligned and flush.
- Tap the end of the second piece with a rubber mallet. This will cause the points of the dowel centers to leave divots on the second piece.
- Use the divots as center points to drill corresponding ¼-in. holes, a little deeper than half the length of your fluted dowels, in the second piece of wood.
- Dry-fit the joint to ensure it is square and the sides of the pieces are flush.
- Once the pieces fit well, glue and clamp the joint with clamping squares to ensure it stays square as the wood glue cures.

Work joint by joint until you have two three-dimensional "L" legs made of the uprights (F), outriggers (G) and cross braces (H). Leave the legs separate for now—the stretchers (J) will be attached later, when you attach the legs to the underside of the table.

8 SAND AND SEAL THE LEGS

Once the glue has fully dried on all the joints of the legs, sand the assembled legs and loose stretchers (J)

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using a palm sander. Step through the grits, starting at 120-grit and finishing at 220-grit. Vacuum the legs to remove any sanding dust once finished.

Use a paintbrush to apply a generous coat of tung oil to the sanded leg components. Let the tung oil absorb into the wood for a few minutes, then wipe away any excess with a shop rag. Apply two to three coats and let it dry in between. Tung oil will develop a sheen as the coats build up. To keep a matte or stain sheen, be sure to wipe back each coat with a rag.

9 ROUT A REVEAL

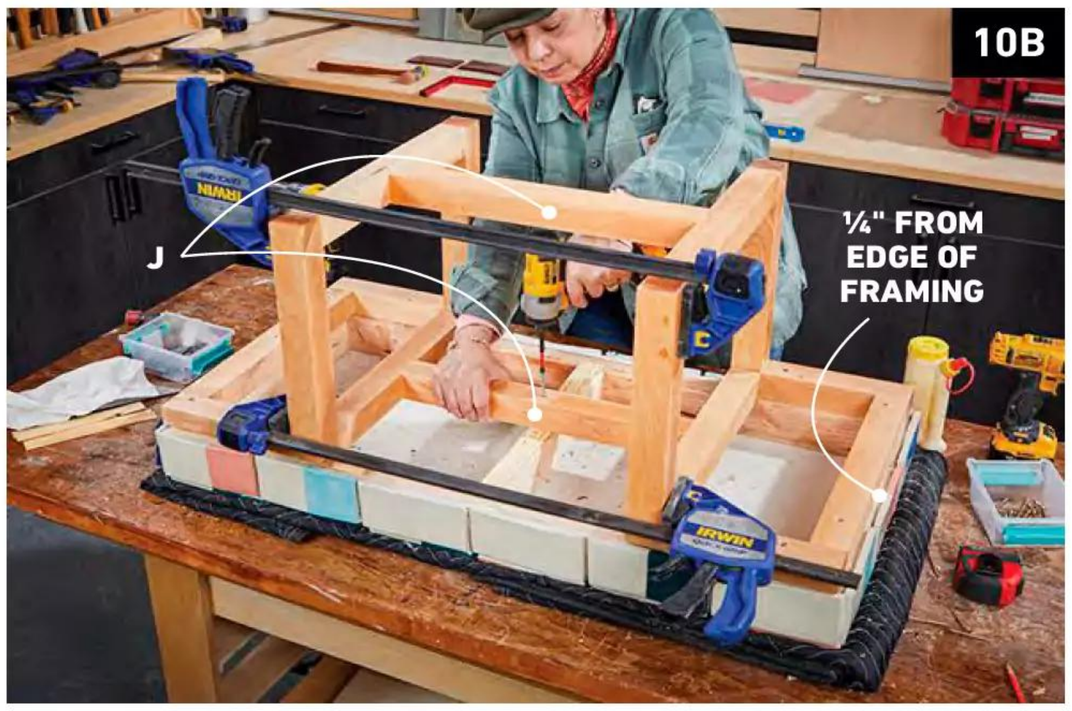
Use a router equipped with a ½-in. straight-cut router bit to rout a ½-in.-wide x ½-in.-deep rabbet along each outside edge of the outriggers (G) and the top of the uprights (F) they are doweled to. Clamp a scrap piece of wood to serve as a guide for the router. You can also use a router table to create the rabbets.

The rabbets will compensate for any curves or imperfections along the bottom edges of your side tiles, making the attached legs look as if they are floating below the tile top.

10 ATTACH THE LEGS

To connect the legs to the tabletop:

- Lay the tiled top upside down on a furniture pad or blanket to protect the tiles as you work.
- Start at one end. Secure one "L" of the legs to the framing, holding it in ¼ in. from the edge of the outside short framing (E) piece. Predrill countersunk holes through the leg outriggers (G) and cross braces (H) into the framing components (D and E) of the tabletop. Use 3-in. screws to secure it.
- Bring together both sets of legs with the stretchers (J) at the top and bottom of the leg assembly. Connect the stretchers (J) centered on the cross braces (H) at the top and bottom with dowels and wood glue.
- While the glue in the



stretcher (J) dowel joints is still wet, use clamps to hold the leg assembly together as you attach the second "L" of the legs to the framing at the other end of the tabletop, again predrilling countersunk holes and using 3-in. screws. Have a damp shop rag handy to wipe away any glue drips and squeeze-out. This can be a stressful part of the build. Take your time—wood glue does not dry instantly.

- Let the wood glue fully dry.

Once the legs have been secured and the glue has dried, get help to flip the table over (it will be very heavy).

11 APPLY GROUT TO THE TABLETOP

Remove all the ¼-in. spacers from between the tiles. Mix the grout in small batches to prevent it from hardening before you can spread it. Using a rubber tile float, work the grout into the joints, forcing it all the way to the bottom of each crevice.

Let the grout set for a few minutes, then wipe away excess from the tile surfaces with a damp sponge, rinsing frequently. Work in stages—let the grout firm up between passes so you don't pull it out of the joints. Grout is very forgiving, so take your time.

12 CLEAN THE TILE HAZE

Once you have wiped away the excess grout, you will notice a buildup of grout powder drying on the surface of the tiles. Let it dry and become chalky. Then, with a clean, dry shop rag, rub away the haze. You will have to do this several times for the haze to fully disappear.

For best results, the rag should be clean at the start of each wipe down. If the haze is not fully cleaned off within 24 hours, it will cure and become permanent. This step is crucial to make the tile project look crisp and clean. I usually do several passes with a clean rag, then do one final pass the next day to ensure all the haze is gone.

13 APPLY GROUT SEALER

Once the grout has fully cured, use a grout sealer to prevent dirt and stains from building up on the grout between the tiles. Use a small artist paintbrush or applicator to apply the grout sealer directly to the grout, being careful not to let it build up and dry on the tiles.

NOTE: Grout sealer will yellow over time and become noticeable on the edges of the tiles. It is good practice to reseal grout every 12 to 18 months. ●

Piece by Piece

Visit our website to watch Carmen lay out her tiles and assemble the tabletop.

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Family Handyman Outdoor Giveaway

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Let the Sunshine In

Maximize natural light and add square footage to your home with a bright and airy sunroom. In this ultimate guide, contracting and design experts weigh in to help you get the most from your space.

BY ALLY CHILDRESS

DAN TOTILCA/GETTY IMAGES

What Is a Sunroom?

These light-filled spaces take many forms. Understanding your options is key to choosing the right approach for your home.

The word *sunroom* is a catch-all term for a glass-enclosed room that bridges the gap between indoors and outdoors. The key word there is *glass*: Sunrooms are "designed to bring in as much natural light as possible," says Justin Olewack, founder and president of Bolt Builders, a custom home building and remodeling company in the Washington, D.C., area.

Sunrooms typically have multiple walls of windows (sometimes floor to ceiling) and a solid or glass roof. That said, variations abound, and how you use the room can matter as much as how it's built. Common terms include:

Solarium: Maximizes light from every angle with a glass roof and walls of windows.

Conservatory: Glass-roofed and glass-walled like solariums, conservatories were traditionally airy spaces for plants and people. Popularized in the Victorian era, they tend to be more ornate and uniquely shaped.

Orangery: This large sunroom variation has roots in Europe, where it was used to grow citrus trees indoors. Colleen Bennett of North Carolina–based CBB Design Firm describes a modern orangery as a "bougie sunroom," typically made of metal and glass. "It extends off the roofline and just looks gorgeous," Bennett says.

Florida room: Popular in the Sunshine State, these bonus rooms are exterior additions that may be enclosed with glass or screens for year-round use.

Screened-in porch: Not a true sunroom, but an outdoor transition space enclosed by screens to allow airflow and keep insects out.

Lanai: Originating in Hawaii, lanais are open-sided attached porches or patios with roofs.

Three- and Four-Season Sunrooms

Sunrooms are also defined by whether you can use them year-round. "A four-season sunroom will be built like the rest of the house," Olewack says, "with insulation, energy-efficient windows, some form of heating, ventilation and air conditioning (HVAC), and plumbing if you're adding sinks." (Yes, sinks in a sunroom happen. Bennett has even added a pool!)

"A three-season room, on the other hand, is typically only used during spring, summer and fall, so it won't be fully insulated or have permanent heating and cooling," Olewack says.

Cold winters aren't the only reason to choose a four-season sunroom. In hot climates, a climate-controlled transition space can bring the best parts of the outdoors inside.

Is a Sunroom Right for You?

It depends. "It's a great way to hit that indoor-outdoor hybrid," says Jon Grishpul, home renovation expert and co-founder of great-buildz.com, a free contractor-matching service. Even in bad weather, you can enjoy the feeling of being outside. "I love sitting in a sunroom during the rain—it's such a peaceful, relaxing space."

But adding a sunroom can be a "major project," Grishpul says. Bennett agrees: "It can be cheap and it can be very expensive, depending on what you're looking to achieve."

Adding a New Sunroom

Ready to take the plunge? Here's what the pros say to keep in mind.

Permits and Building Codes

Check with your local permitting office to confirm your plan adheres to local and state building codes. "This is something you'll want to do right," Olewack says. "Cutting corners can cause problems later when you sell or renovate."

Even a basic three-season sunroom may require lighting and other electrical work. Modern codes often call for ground-fault and arc-fault circuit interrupters to reduce fire and shock risks, and you may have to pull new circuits. Even if you're able to extend existing ones, Olewack says it's not an ideal long-term solution, especially if you're adding HVAC equipment or other power hogs. "It's always best to consult and hire a professional for these types of renovations," he says.

Energy Efficiency

With sun comes heat, and without good planning, keeping a sunroom comfortable and your energy bills low can be tricky.

"Energy efficiency starts with smart window and door choices and intentional design," Olewack says. "High-quality windows and doors make a huge difference."

Look for ratings from the National Fenestration Rating Council (NFRC), which establishes standards for heat gain, insulating value and air leakage. Energy Star windows, doors and skylights all bear an NFRC label.

Orientation matters too. East-facing sunrooms get plenty of morning sun, and west-facing rooms can be unbearably hot late in the day. ("You're just gonna get fried," Bennett says.) Sunrooms facing north, which get primarily indirect light, are cooler. Overall, south-facing sunrooms tend to offer the best balance of light and warmth, especially in winter.

Costs

Adding a sunroom isn't cheap. Luckily, you have options, including building one yourself.

"Sunroom kits are less expensive than a custom-built sunroom," Olewack says. "They're meant to be easy to DIY and can range from $20 to $150 per sq. ft., depending on the brand and quality." Meanwhile, a custom-built three- or four-season sunroom addition can cost $100,000 and up—way up, Bennett says.

How does that break down for your project? Grishpul says $150 to $400 per sq. ft. is fairly typical. Smaller three-season builds will fall on the lower end of the range, while a fully insulated, climate-controlled orangery in an expensive market like California could stretch the boundary of the higher end.

Homeowners are frequently surprised by how expensive sunrooms can be, Grishpul says, but there are a few key cost drivers:

Foundation: Site prep work and pouring a new slab to support a sunroom are typically costly.

Roof: "Any time you tie into an existing roof, you have to think about rainfall and how it's directed on the roof," Grishpul says. "There's an added cost factor."

Windows: Single-pane windows may suffice for some sunrooms, Grishpul says, but pricier double- and triple-pane windows offer better energy efficiency.

HISPANOLISTIC/GETTY IMAGES

Improving an Existing Space

A few smart upgrades can turn an underused sunroom into the place everyone wants to hang out

Figure Out What's Lacking

Is your sunroom hot, drafty or poorly furnished? Does your family drift to the den instead? Pinpoint why you're not choosing the sunroom for reading, napping, games or other intended activities—and poll your family too.

"Usually if a homeowner isn't using a room in their home often, it's either because it doesn't have a clear purpose or it's not comfortable," Olewack says. Maybe it's too bright, the chairs are creaky or it's just plain uninviting. Before spending time or money to improve your sunroom, take a beat and ask yourself why you're not using it to begin with.

Leafy ficuses add privacy without blocking natural light.

FROM TOP: SAGAR GUPTA/GETTY IMAGES, HYRMA/GETTY IMAGES

Landscape Strategically

Landscaping is a great way to transform an existing sunroom. Bennett likes adding a few fast-growing leafy trees or arborvitae around the exterior for shade and interest. "Or if you want something a little bit more posh, I love an Italian Cypress."

Trees and other "pre-tall" landscape elements will also block lookie-loo neighbors and street traffic, if the problem with your sunroom is exposure. And they're a must for any east- or west-facing sunrooms to cut the glare and heat. "Usually people find that more inviting," Bennett says.

Indoors, Bennett says, a big ficus can do wonders. Bottom line: For a fast, relatively low-effort sunroom transformation, "landscaping is usually the cheapest way of doing it," Bennett says.

Update the Shades and Furniture

Sunrooms bring to mind summery rattan and wicker, which makes sense because humidity is a common nemesis. "'You never want to have a client go, 'Hey, my sofa's growing mold,'" Bennett laughs. But you're not limited to rickety, uncomfortable couches and chairs. Furniture, fabrics and other interior design elements have come far.

Invest in comfy, fade-resistant pieces. Bennett recommends seeking out solution-dyed acrylic fabrics from brands such as Sunbrella, Perennials and Outdura, as well as mold-resistant rugs. Get creative! "I even love putting swings in sunrooms," Bennett says.

If it's heat that is keeping you out, "I often see people put shades on the top and install ceiling fans to make it more of a relaxing space that can be used in the evenings as well," Grishpul says. "I love an outdoor curtain," Bennett says. In fact, she's putting outdoor curtains on a house right now: "Literally, you just power-wash them like you would power-wash your outdoor furniture," Bennett says. ●

A ceiling fan improves airflow and keeps you more comfortable when the sunshine streams in.

Do Sunrooms Add Home Value?

"Generally, I would not look at a sunroom addition as a value generator," Grishpul says. "But it will depend on the type of sunroom you build."

A climate-controlled, four-season sunroom that adds square footage and looks great "is truly an extension of your home," Grishpul says, and it can appeal to buyers seeking an indoor-outdoor bonus space. But an aluminum-framed, three-season, DIY sunroom will have less impact—or even hurt curb appeal if built poorly.

Of course, your personal ROI matters too: If you enjoy using the sunroom, fancy or plain, it's worth it even if you don't recoup every dime.

New Kitchen on a Budget

Upgrade cabinets, hardware and countertops
for a pro-level refresh at a fraction of the cost

Install Ikea Cabinets

Doing the job yourself is easier than you might think—and it can save you thousands

BY SAMUEL ROSENMAYER

Renovating a kitchen is expensive, but handling some of the work yourself is a smart way to cut costs. Labor alone can account for about 25% of a full kitchen remodel. With total costs often reaching tens of thousands of dollars, that's a lot of potential savings.

If installing new kitchen cabinets sounds intimidating, don't worry—ready-to-assemble Ikea cabinets make the job much more straightforward. Their suspension rail system simplifies installation and adjustment.

Still, no matter the size or layout of your kitchen, preparation is the key to a smooth install. So take time to plan your cabinet layout before starting, noting the locations of appliances, floating shelves, and other elements that could affect placement. The more you think through upfront, the easier installation day will be.

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1 REMOVE THE OLD CABINETS

Empty the old kitchen cabinets and remove the shelves. Then use a drill to unscrew the cabinets from the walls and/or from each other before gently detaching them from the wall.

2 CHECK YOUR FLOOR FOR LEVEL

Most kitchen floors are very flat, especially in homes less than 40 years old, but it's still important to confirm before installing new cabinets.

Start by looking for the highest spot on the floor anywhere a base cabinet will sit. Mark that spot, and repeat along all other walls that will have cabinets to find the highest spot. If you have two high spots, rest a board on both to determine which is higher.

From the highest spot, measure up the wall 34½ in. (standard cabinet height) and make a mark. Use that mark as a starting point to draw a level line along the walls wherever base cabinets will be installed. A laser level makes this process easier and faster.

3 ASSEMBLE AND DRY-FIT THE CABINETS

Fully assemble all the cabinets according to Ikea's instructions. Then dry-fit the base cabinets, starting with the corner units and

Tools

- 2' level
- 4' level
- Assorted drill bits
- Clamps
- Drill
- Drywall anchors
- Flat-head screwdriver
- Laser level
- Miter saw
- Phillips screwdriver
- Portable band saw or angle grinder
- Square
- Stud finder
- Tape measure

Materials

- 1⅛" screws
- Ikea cabinet trim (optional)
- Ikea cabinets
- Ikea cover panels
- Ikea toe-kick with connectors
- Masking tape

placing all the cabinets side by side as tightly together as possible. If your layout calls for filler strips, be sure to leave spaces for them.

With the cabinets in place, check that the drawers and doors clear one another, appliance openings are the proper widths, and sink bases are centered beneath any windows. With a well-planned layout, any required adjustments should be minor, such as ripping filler strips narrower or using wider ones.

Next, remove the drawers, doors and shelves and mark them and their matching cabinets with numbered masking tape to avoid confusion during installation. Then move the cabinets out of the way.

4 CUT THE SUSPENSION RAILS

Measure the total length of each row of cabinets. Using a portable band saw or an angle grinder, cut the suspension rails about ¾ in. shorter than the cabinet runs so they will be concealed.

5 INSTALL THE BASE CABINET SUSPENSION RAILS

Attach the suspension rail to the back of one of the loose base cabinets and measure its height. The cam that attaches to the suspension rail can be attached to the cabinet interior at several different locations, and the rail's height will vary depending on which location is used.

I assembled my cabinets using the lower cam location, so I installed the bottom of the suspension rail level $30\frac{15}{16}$ in. above the high spot on the floor (or $3\frac{9}{16}$ in. below the 34½-in. "top of cabinet" line marked in step 2).

Use a stud finder to locate the wall studs, which are usually spaced 16 in. apart. Mark the locations with straight vertical lines using a pencil and a level. Attach the suspension rail to the wall studs, using a drill to drive in the screws and washers included with the rail. If the

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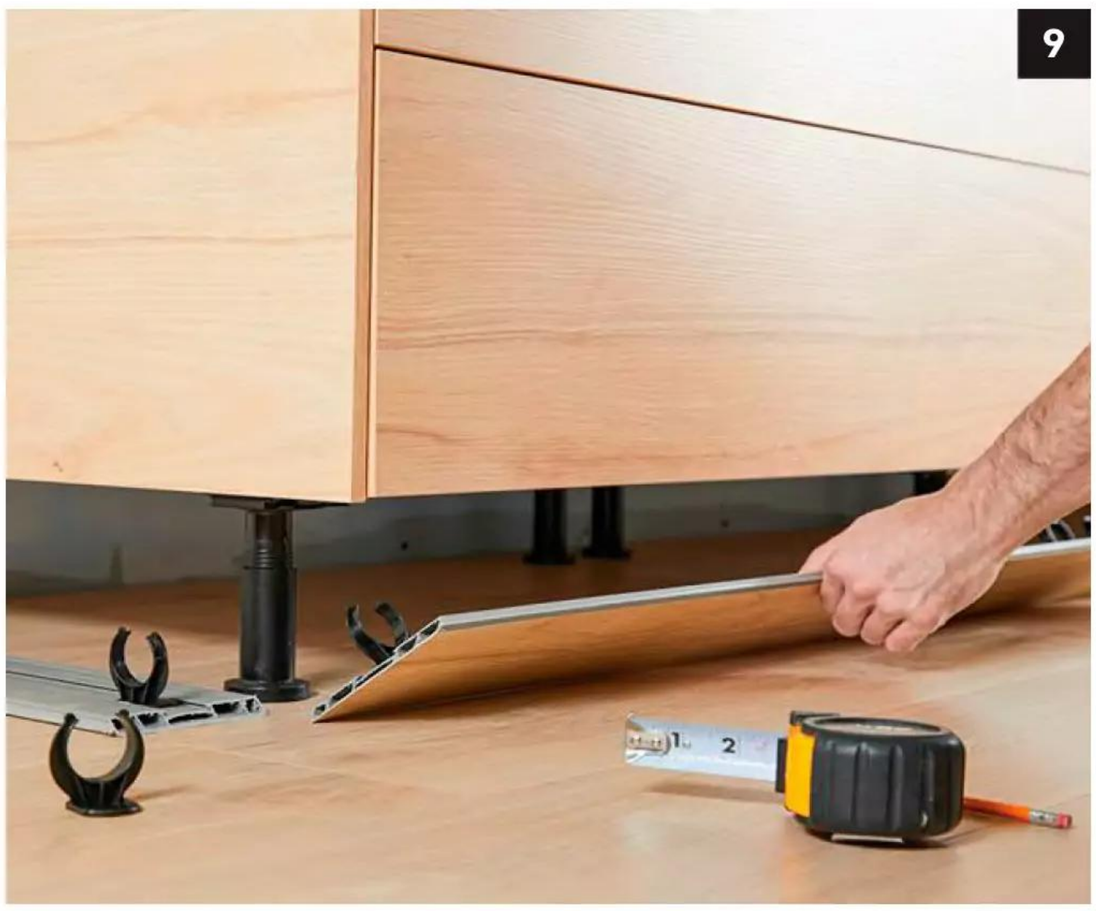

end of the rail lands between studs, secure it with a drywall anchor.

6 INSTALL THE BASE CABINETS
Starting with the corner cabinet, attach the base cabinets to the suspension rails with the cams attached to the back of each cabinet. Once they're installed, secure the plastic locking mechanism that attaches the cam to the suspension rail at the back, top corners of the cabinet. Use a flat-head screwdriver to turn the mechanism clockwise until it is tight.

7 ADJUST THE CABINET LEGS
After you hang the base cabinets, adjust the cabinet legs to bring the cabinets to the required height. Use 2- and 4-ft. levels to ensure each cabinet is level front to back and even with the other base cabinets.

8 JOIN THE BASE CABINETS
Screw the base cabinets together with 1⅛-in. screws. I used four screws—one near each corner—to hold each set of cabinets together. To avoid interference with the drawers, make sure the screw heads are as flush as possible.

9 ATTACH THE TOE-KICK
Once the base cabinets are installed, attach the Ikea toe-kick to the base cabinet legs using the Ikea clips for your particular installation. Use a miter saw to cut any mitered ends that your cabinet layout requires, keeping in mind that you may have to trim the height of the toe-kick to match any humps in the floor.

10 INSTALL THE UPPER CABINET SUSPENSION RAILS
If your base cabinets are standard countertop height, it may be easier to install the countertop (see page 37) before moving on to the upper cabinets. Sometimes the cabinets will share a suspension rail; other times they require their own. It all depends on the cabinet layout.

No-Stress Cabinet Hardware

Installing handles and knobs on kitchen cabinets seems straightforward: Drill a few holes, screw in the hardware and you're done. That is, until you have 27 knobs and 8 handles, with the handles all spaced in metric measurements. Pulling out a measuring tape for each one leaves plenty of room for error.

That's why, for repetitive tasks like this, carpenters turn to a jig. Make one with all your spacing figured out, and you can use it over and over without worrying about precise measurements each time. It's worth it. One crooked handle will annoy you every time you walk into your kitchen.

We've got steps for a basic sliding handle jig for pulls and a corner jig for knobs. The extra effort upfront makes installation easier, and the hardware will be in place in half the time. Visit our website for the full instructions.

If you install cabinets close to the ceiling, it is extremely important to ensure the ceiling isn't sagging. If it is, you will need to adjust the upper suspension rail height accordingly to ensure the cabinet doors can fully open. Our ceiling was high enough that we did not have to worry about that.

Cut the suspension rail to length, determine its position and secure it to the studs as you did with the base cabinet suspension rail.

11 HANG THE UPPER CABINETS

Attach the upper cabinets to the suspension rails and lock the cams. If you're working alone, clamp a board to the side of the cabinets to handle some of the weight while you maneuver each one into place.

Then use a drill to join the cabinets with 1⅛-in. screws. If applicable, start with a corner cabinet and work your way out.

12 INSTALL COVER PANELS ON THE FINISHED ENDS

Next you'll add cover panels to match the finish of the doors and drawer fronts on the outside of the end cabinets. Once they are level and the front edge aligns with the drawer face, clamp them to the cabinet and fasten the panels with 1⅛-in. screws from the interior of the cabinets. Make sure everything is level and straight. In some cases, you may need to cut or scribe the panels to size.

13 ADD CABINET HARDWARE COVERS

Attach the plastic hardware covers to the corners of the cabinets where the suspension rail cam hardware is visible. The covers fit securely onto the hardware within a premade channel.

14 ADD TOP TRIM (OPTIONAL)

If you didn't order the upper trim for the cabinets, you can skip this step. The trim is machined with channels and special angle brackets that fit into place and are screwed to the top of the upper cabinets. Use clamps to hold the trim in place while you secure it with the included screws.

15 FINISHING TOUCHES

Reinstall the drawers on their drawer slides and snap the cabinet doors into their installed connection plates. Use a Phillips head screwdriver and the three exposed hinge screws to align and adjust the cabinet doors.

Once your cabinets have been installed, install the countertops (see next page) and drawer pulls (see "No-Stress Cabinet Hardware," left).

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Upgrade Countertops

Switching out surfaces is a surefire way to elevate your space. Mind the details to achieve a luxe look for less.

BY CARMEN DE LA PAZ

Installing a new countertop is a chance to add a fresh personality to your kitchen. Even if you have brand-new cabinets, countertops tend to be the first thing people notice. Tackling the installation yourself is all about measuring precisely, planning cuts carefully, and knowing what to do to create a seamless look, even when walls and corners aren't perfectly square.

As with any renovation, this one is a balance of style, function, budget and skill level. For a more DIY-friendly option, consider laminate countertops. We chose a laminate with a marble-look finish for the high-end appearance of stone without the high cost.

Here, I share tips and tricks to make installing laminate or wood countertops manageable for DIYers. The process isn't especially complex, but your attention to detail will determine whether the finished result wows or falls flat.

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Tools

- 2' or 4' levels
- Caulk gun
- Drill
- Framing or drywall square
- Painter's rags
- Predrill bit
- Sawhorses
- Straightedge
- Track saw, circular saw or jigsaw

Materials

- Caulk
- Countertops (wood or laminate)
- Painter's tape
- Screws

1 ENSURE THE CABINET TOPS ARE LEVEL

Using a 2- or 4-ft. level, make sure the tops of all your cabinets are flush and level—from front to back and side to side. If the cabinets are not level, correct them before installing the countertops. If it is not possible to level them, you may have to use shims as you go.

2 DRY-FIT AND MARK THE COUNTERTOPS

Lay out the countertop sections on top of your cabinets to test their fit and plan your cuts. Keep the manufactured edges at the ends and align seams where base cabinets come together—this makes the seams look intentional rather than random.

Check walls and corners carefully, as they're rarely perfectly straight or square. Use a straightedge or level to identify any irregularities, then scribe the back edge of the countertop to match the wall contour for a seamless fit.

Mark your final cut lines, accounting for any wall imperfections you discovered. Even one or two degrees of adjustment can mean the difference between perfect seams and ones with gaps.

3 CUT THE COUNTERTOPS

Using a track saw, circular saw or jigsaw with a fine-tooth blade, cut the countertop to length and scribe any contours.

To prevent chipping the countertop material, place a piece of painter's tape on top of the marked cut line and position the track saw's rubber edge on the side of the countertop you're keeping/using. Depending on the countertop material, it may be necessary to lightly sand the cut edge.

4 CHECK THE CUTS

As you cut them, place all the cut pieces of countertop into position. Don't secure any of them to the cabinets yet. Ensure all seams fit tightly together and adjust the placement to account for any wall irregularities. Make slight adjustments or scribe cuts again if needed. For inside corners, make sure the two pieces meet at a perfect 90-degree angle—even small gaps will be noticeable.

Once everything fits properly, prepare the exposed edges if necessary (ours didn't require it). Many laminate countertop manufacturers sell matching edge banding for newly cut exposed edges—for example, next to a stove or at the end of a countertop run. Apply this edge banding before final installation—most types use iron-on adhesive, though some may require contact cement or nails. After application, use a file to smooth any sharp edges of the banding.

5 SECURE FROM UNDERNEATH

Once you are satisfied with the placement and cuts of all pieces, start securing the countertop pieces to the cabinets with screws from underneath, spacing them approximately every 12 to 16 in. along the cabinet rails. Be sure to maintain a consistent overhang on the front. Before final securing, check that the countertop is level across all sections.

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Some cabinets will have wood gussets to screw through, and some cabinets will have metal hardware with open holes for screws. Make sure your screws are long enough to reach the middle of your material but not long enough to penetrate and damage the top. Adding small washers to your screws can help distribute the load. Use a predrill bit to slightly open the material and guide the screw in straight.

Follow these guidelines to determine where to begin securing the countertop:

- If your countertop includes a corner, start with the piece in the corner and double-check seams in both directions the countertop will run.
- If your countertop is a straight run and meets a wall at one end, start on the end where it meets the wall.
- If your countertop is a straight run with a manufactured edge on each end, start at one end, but be sure to preserve a consistent overhang on the edge and front.

Around sink cutouts and other openings, add additional screws for stability, placing them about 2 in. from the cut edge.

6 CAULK THE SEAMS

Use kitchen/bath-grade or 100% silicone caulk to seal all the seams. If necessary to hide seams, place a small bead of caulk along the seam and wipe away the excess with a damp cloth. If your wall bows out, preventing the countertop from sitting flush against it, fill the open spaces with caulk.

Match the caulk to the dominant color of the countertop to help the seams blend in. Let the caulk cure fully according to the manufacturer's instructions (typically 24 hours) before using the surface. ●

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BEST PRO TIPS

Power Moves

Ready to take outdoor cleaning to the next level? Follow this pressure-washing advice from an expert.

BY KARUNA EBERL

WELCOMIA/GETTY IMAGES

Use a pressure between 1,100 and 1,900 psi to protect your car's paint while removing grime.

Pressure-washing can quickly become an obsession. Once you start on decks and patios, it's only a matter of time until you pivot to fences, driveways and siding. Using pressure washers correctly isn't rocket science, but it does require finesse. These tools definitely pack a punch, and without proper care and use, they can cause costly damage (or worse, injuries).

From prepping the work area and applying detergent to choosing the right nozzle and setting, these expert tips will help you harness all that power—without turning your project into a repair job.

Choose the Right Nozzle

"Choosing the correct nozzle is one of the simplest ways to get better cleaning results, but many homeowners don't realize how much the nozzle affects pressure and water flow," says Dylan Fox, a North Carolina-based product development manager at Greenworks. Most routine tasks benefit from a fan jet in the 15-to-40-degree range, but for tough buildup, consider a turbo nozzle with a strong rotating spray.

Avoid the 0-Degree Jet

This narrow "pencil" jet can cut through dirt—and surfaces—so reserve its use for targeted tasks such as reaching high corners or clearing weeds from cracks. "A turbo nozzle delivers similar cleaning strength with far less risk, thanks to its rotating spray pattern that spreads the force more evenly," Fox says.

Prep the Work Area

Clear away loose items, cover outdoor outlets and remove debris that could bounce back under the spray. "Many people rush straight to washing, but that makes the job harder and less consistent," Fox says. Taking a few minutes to prep gives you a clear path and helps keep surfaces evenly wet, allowing detergent to work more effectively.

Research Your Surfaces

Hard surfaces such as concrete and stone can typically handle the pressure, but softer materials can be easily damaged with the wrong technique. When cleaning wood, start with a wide pattern and lighter pressure, and always test an inconspicuous area first, especially if the paint is old or the siding is weathered. "If a surface feels soft or brittle, it's best to reduce the pressure or switch to a different cleaning method altogether," Fox says.

Put Safety First

Always wear eye protection, gloves and sturdy footwear. "It's easy to forget that the spray can send debris flying at high speed, often posing more danger than the water jet itself," Fox says. Also, never spray yourself or anyone else, and keep pets and children well away from the work area.

Buying Your First Pressure Washer?

The portable, efficient Sun Joe Electric Pressure Washer ($169) is lightweight and user-friendly, making it an ideal choice for beginners. Content Director Nicole Doster, a first-time pressure washer user, had this to say: "I could not believe the results. We've cleaned our vinyl greenhouse, metal shed, cars and the tile on our front patio. It was mesmerizing to see how effortlessly it cleaned our grout."

FROM TOP: IMAGEDEPOTPRO/GETTY IMAGES, VIA SUN JOE

"Choosing the correct nozzle is one of the simplest ways to get better cleaning results."

Nozzles with narrower spray angles deliver more concentrated cleaning power.

Use the Lowest Pressure

It's tempting to dial up the pressure from the start, but that isn't always safer or faster. Instead, ease into it, gradually increasing the pressure until debris begins to lift. Also, protect siding and wood by letting the spray angle do the work rather than relying on force alone, says Fox. "This approach helps prevent stripped finishes, gouges and unwanted marks," he says.

Let the Detergent Sit

Detergent helps break down grime, allowing you to clean effectively with less pressure. Let it sit on the surface for a few minutes before rinsing, and apply soap from the bottom up to prevent streaking. Use only detergents made for pressure washers, and dilute them as directed to protect the pump. "Foam cannons create a thicker layer of suds that clings to vertical surfaces, making siding and fencing easier to wash," Fox says.

Keep a Steady Distance

Holding the wand 6 to 12 in. from the surface delivers more even cleaning on patios, fences and siding. "Keep the wand moving and overlap each pass to prevent pressure from concentrating in one spot," says Fox.

Use Electrical Sense

With electric pressure washers, use a properly rated extension cord to maintain peak performance and reduce the risk of tripped breakers. If possible, keep the cord short or plug directly into an outlet with sufficient available power. If you're buying an electric model, look for one with a brushless motor, which delivers more efficient performance, says Fox.

Rent or Buy a Washer—or Call a Pro

If you tackle large areas a few times a year, owning a pressure washer is usually the most practical choice. For one-off projects, however, renting can be simpler and more cost effective. "When you are dealing with very high surfaces or tricky materials, hiring a pro can save time and prevent accidental damage," says Fox. "The best choice ultimately depends on your comfort level and how often you plan to clean." ●

MEET THE PRO Dylan Fox is a product development manager at Greenworks, specializing in development and retail strategy, helping drive innovative solutions.

CLOCKWISE FROM TOP: VIA SUN JOE, GREENSEAS/GETTY IMAGES, GREENWORKS

Think Before You Pressure-Wash ...

- **Anything Electrical**
  This includes meters, air conditioners and outdoor light fixtures. High-pressure water can penetrate seals and cause damage.
- **Asphalt Shingles**
  Never pressure-wash an asphalt-shingle roof. Doing so can strip the roof's water resistance and throw you off-balance on a ladder.
- **Paints and Stains**
  Pressure washers can strip wood stains and chip paint from furniture.
- **Soft Sidings**
  Use caution when pressure-washing any siding—wood, brick, aluminum or vinyl. These surfaces can be damaged easily, and water forced beneath siding can compromise insulation. Always test in an inconspicuous area.
- **Anything You're Unsure About**
  From birdbaths to outdoor rugs, do a little research before pressure-washing anything new to save yourself major hassle and expense.

Patch Work

Struggling with drywall repairs or installation? Here's how to get smooth results with fewer hassles.

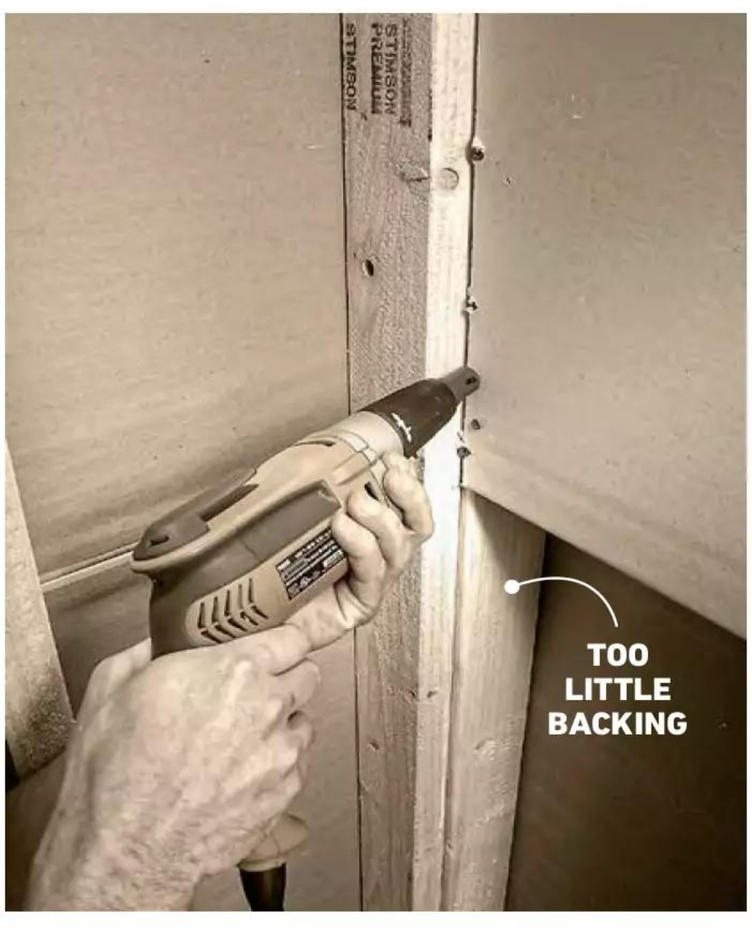
BY *FAMILY HANDYMAN* EDITORS

Q: How do you fix a small hole in drywall?

The edges of a hole or dent are often jagged, so start by smoothing the area with a 150-to-220-grit sanding sponge or a putty knife. Wipe away the dust with a damp rag and let the surface dry.

To patch the hole, use a putty knife to press spackling compound firmly into the opening and spread it evenly across the surface. Let it dry for one to five hours, depending on the room temperature and patch thickness. Most small holes need only one coat, but add a second if the first doesn't fully cover.

Once the compound is dry, sand the patch and surrounding area with a fine-grit sponge until it's flush with the wall. Apply two coats of wall paint, letting the first coat dry fully before applying the next.



Q: What's a mistake DIYers often make when hanging drywall?

One common mistake is not checking for proper edge support. When you're hanging drywall vertically, inside corners often lack enough exposed framing to catch screws. Make sure there's at least 1 in. of exposed framing; if not, add a 2×4 alongside the existing framing.

Pay special attention to the tops of walls that run parallel to ceiling joists, where blocking is often missing. If space is tight, drive screws into the new blocking at an angle from below instead of swinging a hammer.

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Q: Why do drywall cracks form along corners, and what's the best way to fix them?

Every home settles unevenly as it ages, sometimes causing inside corners to crack or ripple. Often, the crack will run vertically from floor to ceiling. Before making any repairs, watch the area for a couple of months and make sure the movement has stopped.

Next, cut through the tape at the ends of the cracked area and remove all loose tape and compound. If the drywall underneath has crumbled, cut it out and fill the gap with a setting compound. Then retape the corner by creasing paper tape so it nests cleanly, pressing it into a thin bed of compound and smoothing it along the length.

To avoid marring the opposite wall as you work, apply second and third coats of compound one side at a time, tapering the compound about 6 in. out and letting each side dry before working on the other. Finish by sanding with a fine-grit sponge.

Q: Any tricks for taping butt joints?

Drywall sheets have depressed edges to account for the thicknesses of tape and mud. When you cut a sheet, you lose that edge, leading to what's known as a "butt joint." When it comes to taping butt joints, try this: Hold a utility knife at an angle and slice off the drywall edges to carve a shallow "V" groove between the sheets after you hang them. Then fill the groove with setting-type joint compound before you cover the seam with joint compound and tape. ●

6 Essential Patching Tips

Use these techniques to make drywall repairs cleaner, faster and easier.

1. **Use Setting Compound for Big Holes**
   For deep holes and holes that are dime-size or larger, use a fast-setting compound that hardens chemically; it fills better and lets you recoat quickly.
2. **Make a Dent for the Compound**
   Use a tool handle to tap a dent over nail or anchor holes, then fill the dent. The patching compound will sit flush rather than riding on old paint ridges.
3. **Skim-Coat Dented Walls**
   If a wall has many dents, skim-coat the whole section with thin layers of joint compound rather than filling each ding.
4. **Use Mesh Patches for Doorknob-Size Damage**
   After sanding the area, apply a stick-on mesh patch and cover it with a few thin coats of compound.
5. **Spray on the Texture**
   When you need to patch orange peel texture on walls or ceilings, buy a can of texture spray for orange peel and knockdown walls and ceilings. Practice your technique on scrap drywall or cardboard.
6. **Use a Raking Light**
   Shine a light across the wall as you sand and patch; slanted light exposes ridges and low spots you might otherwise miss.

Smarter Spring Cleaning

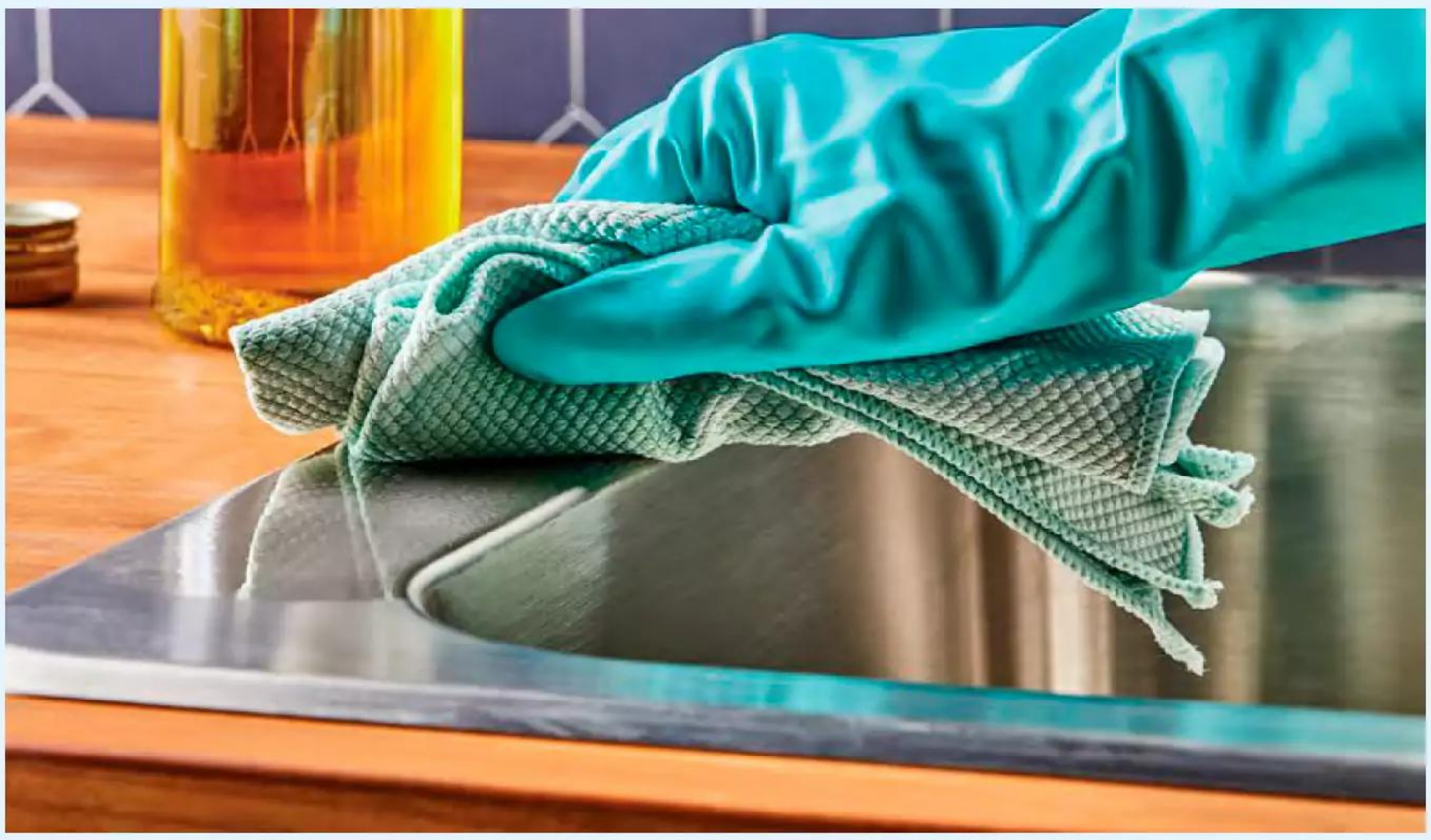
From unexpected messes to everyday chores, master home care like a pro with these expert tips and tricks

Get Rid of Crayon Marks

To remove crayon marks from walls without stripping the paint, former art teacher and Clean Mama founder Becky Rapinchuk recommends a paste of 1 part water to 3 parts baking soda. Applied with a damp cloth, the mild abrasive gently rubs off the wax and pigment. This solution is safe for most painted walls and doors, regardless of the paint sheen, but always test in an inconspicuous area first.

No More Missing Socks

A zippered mesh laundry bag can prevent socks from mysteriously disappearing, says professional organizer and STR8N UP founder Jennifer Truesdale. “Use a clothespin to clip a bag to each person’s hamper,” she says, and let your family know that the socks should go there instead of the main hamper. “When you’re ready to do a load of laundry, throw the bag in the wash, then transfer it to the dryer. You won’t ever have to sort socks or look for missing ones, because they stay together through the laundry cycle.” Choose a bag with anti-rust zippers and a zipper lock so it won’t open in the wash.



DIY Polish for Stainless Steel

Skip the harsh chemicals in stainless steel polish and turn to your pantry instead. For a sink that shines, try olive oil. After cleaning with warm water and soap, then wiping with a little vinegar, put a few drops of olive oil on a soft cloth and rub it on—always with the grain, says Ryan Knoll, owner of Tidy Casa. “It’s like petting a cat the right way,” he says. A little oil goes a long way; your sink should not feel greasy afterward.

TMB STUDIO

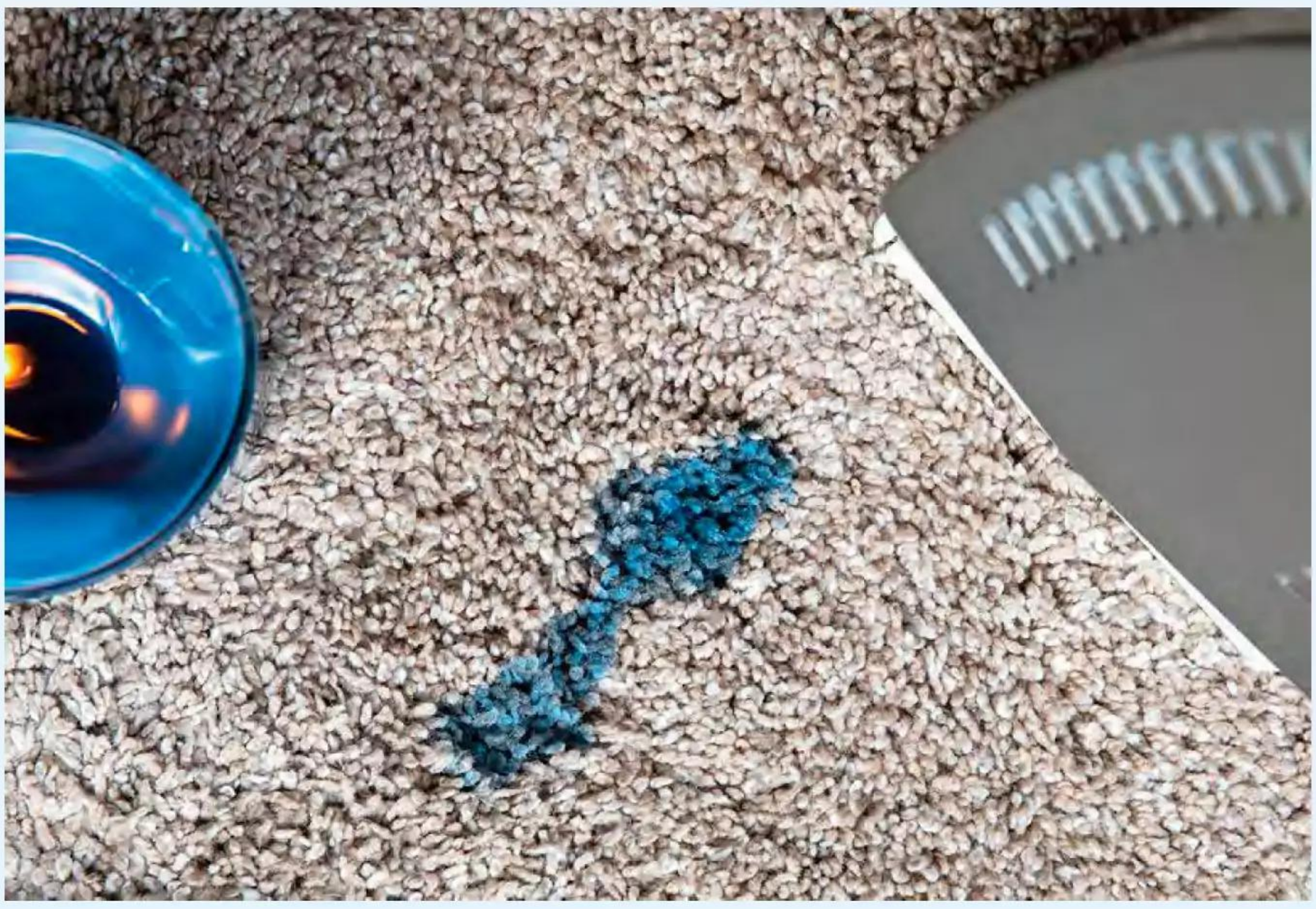
Mind the Kitchen Gap

Those gaps between your stove and cabinets are magnets for food, grease and spills, and pulling out the stove to clean them can be a hassle. Cleaning expert Alicia Sokolowski, co-CEO of AspenClean, has a simple fix: heavy-duty aluminum foil. Measure from the wall to the counter edge, add 4 in., and cut a sheet of foil to length. Fold it in half lengthwise, fold the ends 2 in. inward, then fold lengthwise again into a V-shape or flat-bottom “boat.” Slide a foil boat into each gap to collect crumbs and spills, and pull them out as needed for easy cleaning.

> “Hang a soap dispenser dish brush in the shower. You can scrub the shower while you’re in it anyway, and dish soap does a great job of cleaning the bathroom!”
>
> **—Dana White, founder, A Slob Comes Clean**

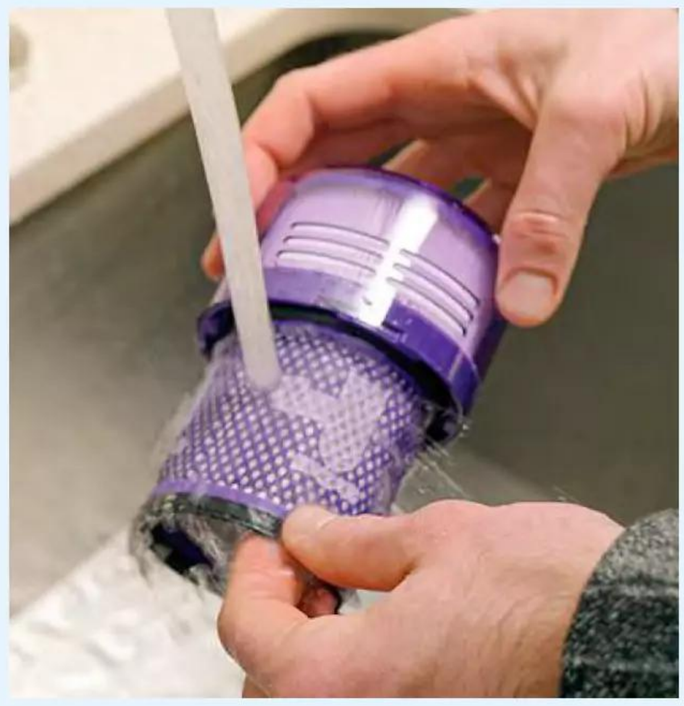
Gleaming Glass Stovetop

Cleaning your glass stovetop doesn't have to be a chore, Sokolowski says. Start with a cool surface and mist it with equal parts distilled white vinegar and water. Wipe with a damp microfiber cloth, then sprinkle baking soda generously over the surface. Next, dunk a couple of kitchen towels in very hot water, wring them out and drape them over the baking soda. After 15 minutes, use one of the towels to gently scrub across the stovetop. "Do not use heavy pressure," Sokolowski says. "A light touch is always better!" Carefully scrape any stubborn buildup with a razor blade, then respray with the vinegar solution and buff dry for a sparkling finish.



Wax On, Wax Off

If wax spills on your carpet, all is not lost, says Rosa Nogales-Hernandez, head of home cleaning at Valet Living. To remove it, first dampen a clean cloth so it's moist but not dripping. Place it over the cool, dry wax, covering the stain completely. Using an iron, apply medium heat to pull the wax out of the carpet and make it stick to the cloth. Blot a few drops of rubbing alcohol onto any oily or discolored spots left after the wax is removed.



Wash a Dyson Filter

For best performance, wash your Dyson vacuum filter monthly. Use only running water, says Nathan Lawson Mclean, a senior design manager at Dyson. "Soap or cleaning solution can damage the filter or machine." Tap the filter on the edge of a sink or trash can to dislodge debris, then run it under warm water, rubbing with your hands. Fill the filter with warm water, cover the ends and shake to loosen stubborn particles. Repeat until the water runs clear, then shake out excess water and let the filter dry for at least 24 hours.

Remove Stubborn Sticker Residue

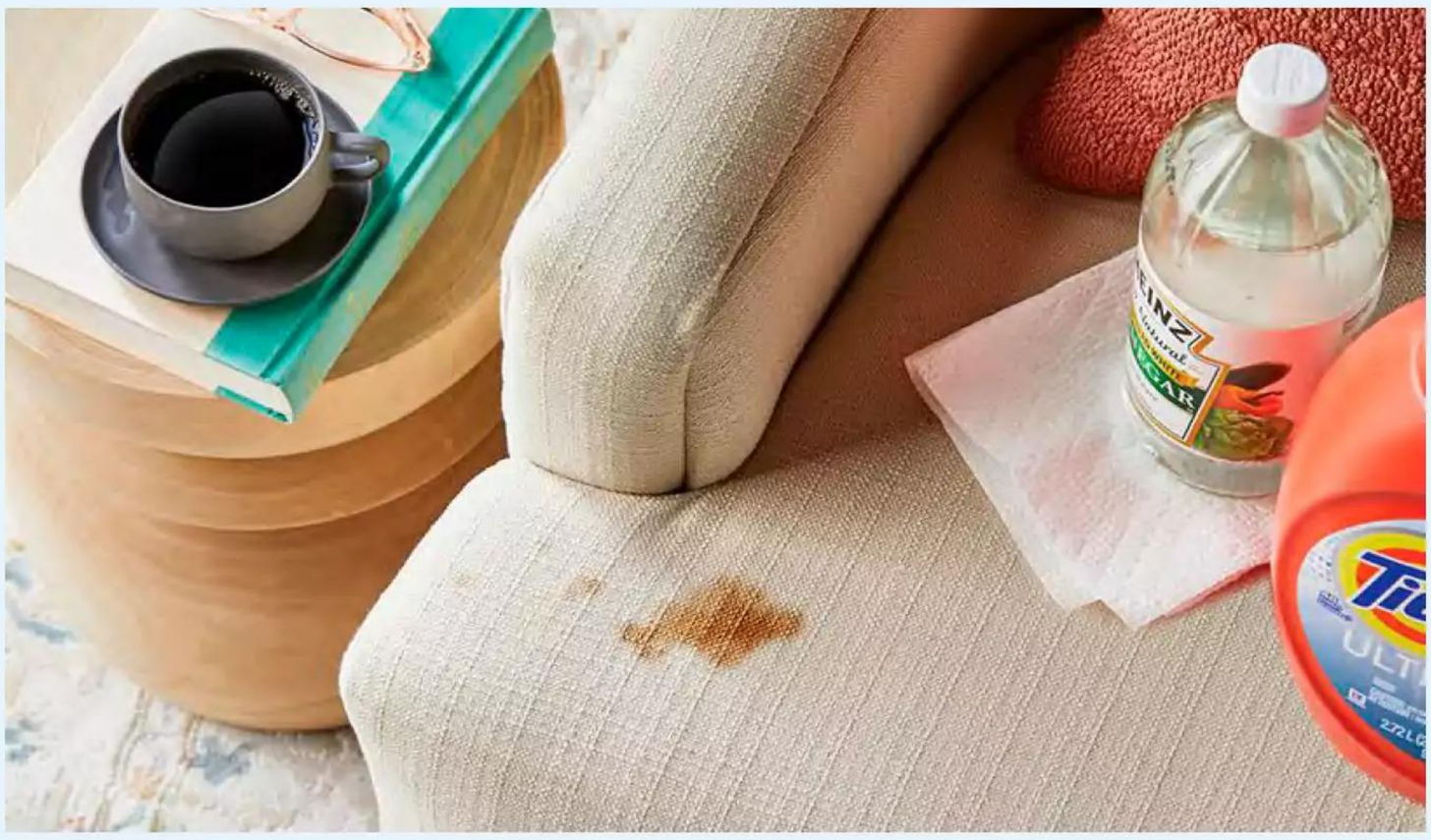
We've all been there: You peel back a sticker or label, hoping for a clean removal, only to be disappointed. Mattie Sheppard, founder of Perfectly Pictured Decluttering & Staging Experts, suggests using a hair dryer on low to soften the residue or gently rubbing with oil or vinegar. To avoid any damage, consider what the surface beneath can handle.

TMB STUDIO

Squeaky-Clean Sponges

Damp, porous sponges are ideal breeding grounds for bacteria. “Every time you use a sponge, you are spreading bacteria around,” says Dr. Charles Gerba, a professor of microbiology and public health at the University of Arizona. One easy way to sanitize a sponge is in the dishwasher, but be sure to secure it—a loose sponge could block the drain, Gerba says.

Place the sponge in the utensil holder or a plate slot, then add detergent. Select the longest cycle with the highest heat and press “Start.” When the cycle ends, remove the sponge, wring it out and let it air-dry on a clean surface.



Treat Coffee-Stained Upholstery

Coffee spills happen, but they don’t have to ruin your couch. Act fast and use a clean cloth or paper towel to blot the stain—don’t rub, says Kim Romine, a fabric care scientist at Procter & Gamble. If the cushion covers are removable, take them off and rinse with cold water. Then dab the stain with a mixture of 1 tablespoon of laundry detergent, 1 tablespoon of vinegar and 1 cup of water using a clean microfiber cloth. Blot from the outside edges inward to prevent spreading, repeating as necessary, then let the fabric air-dry.

TMB STUDIO, LIUDMILA CHERNETSKA/GETTY IMAGES

AirPod Tuneup

Built-up earwax, sweat, dirt and other grime can shorten the life of your AirPods and even cause irritation or infections. Luckily, they’re easy to clean. Wipe them with a dry, lint-free cloth, then use a dry cotton swab on sensitive areas such as the microphone and speaker mesh. For tougher grime, Burton Kelso, owner and chief tech expert at Integral, suggests using a slightly damp microfiber cloth. “Cleaning agents can ruin your AirPods, so only use water,” Kelso warns. Wipe dry and let them air-dry completely.

Ice Out Stuck Chewing Gum

“Freezing gum with ice cubes, whether the gum is fresh or it has had a chance to harden, is extremely effective for removing gum from most knit and woven machine-washable fabrics,” says Mary Gagliardi, a Clorox laundry scientist also known as “Dr. Laundry.” The gum typically cracks and comes off easily. ●

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Mini Dream Home from Scratch

A *Family Handyman* reader infused Victorian details into a stunning handcrafted playhouse

Haven't we all fantasized about building a house one day? Well, this Victorian playhouse is as close as I'm going to get. I didn't follow any plans to build it—it developed in my head as the project progressed.

I was determined to incorporate Victorian details, which I love, and they are all over the playhouse. I chose a steep roof to create a usable second floor, complete with an internal pull-down ladder that makes it easy to sneak upstairs. Although the cupola doesn't look big, it's actually 4 ft. tall with substructure, and it was tough to lift into place!

The playhouse has electricity and air conditioning and is fully furnished to "home quality" inside. One of the biggest challenges was figuring out the substructure for the shake roof, because I ran into conflicting code information everywhere.

I attempted to do everything as correctly as possible, used quality materials, took my time and enjoyed solving all the problems that popped up along the way. I didn't keep exact records on the total cost, but I know that it was substantial. The project took me about a year to complete, as I chipped away at it between other projects.

If you are considering building a playhouse, my best advice is to check your area's codes and start with a firm foundation. Just go for it!

—**Jim Alexander,** Chapel Hill, NC ⬢

Playtime!

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Outdoor Living

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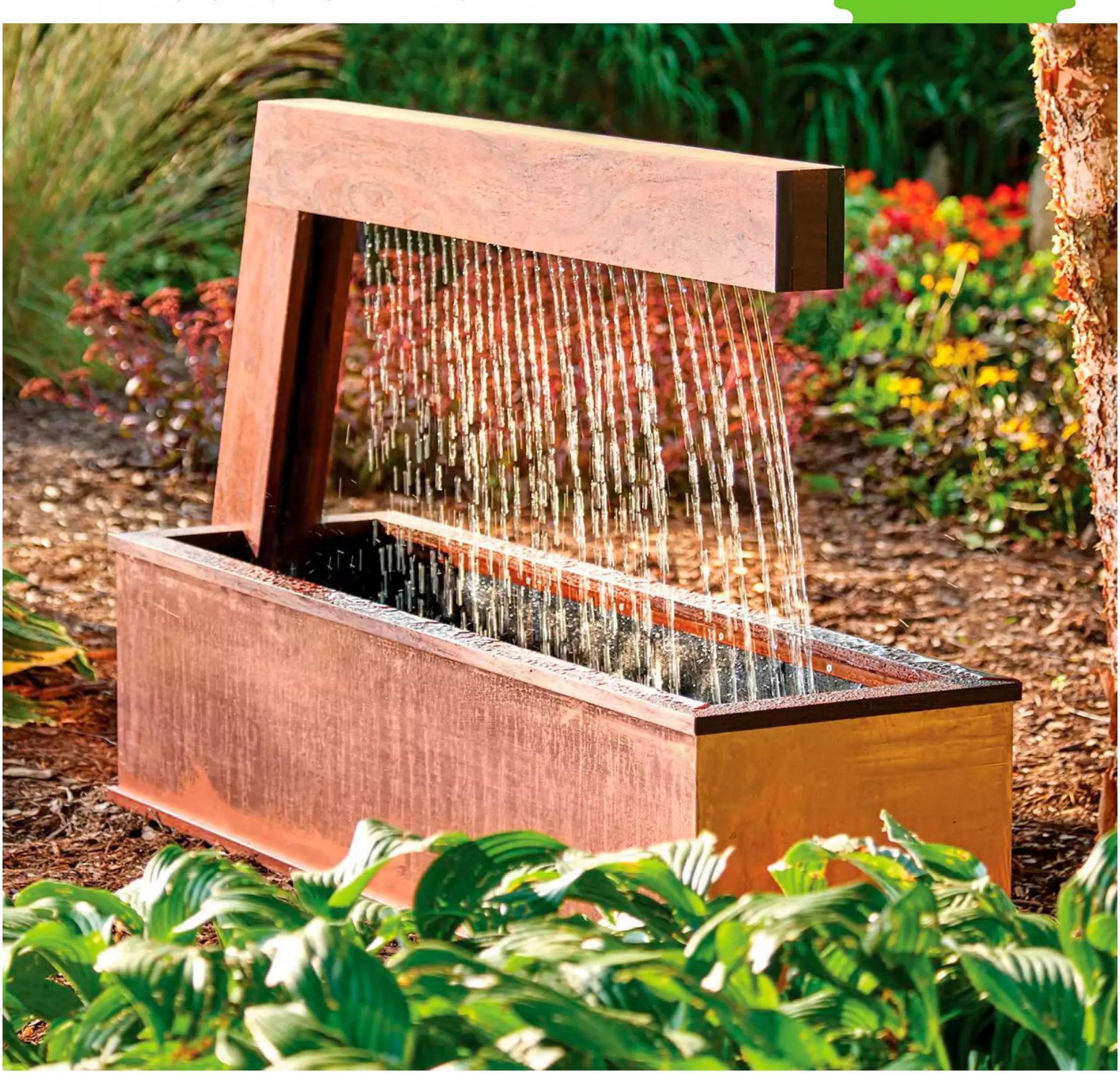
Bonus Section! Fresh ideas for outdoor fun



TMB STUDIO

If you want to transform your yard or patio into a calm, inviting space to kick back and relax, the gentle sound of running water can make all the difference. This sleek DIY water feature requires just a few supplies and minimal effort to build. Made from a simple box reservoir, a pump and basic plumbing components, it keeps water flowing smoothly. As a bonus, it disassembles easily for cold-season storage. Visit our website to find easy step-by-step instructions for this soothing outdoor statement piece.

TMB STUDIO

Backyard Fireplace

It's surprisingly easy to build—and portable too

BY TOM DVORAK

This project was inspired by an outdoor gas fireplace I saw online. The look was exactly what I wanted, but the construction wasn't—I didn't want a 500-lb. concrete cube that couldn't be moved. And I didn't want an underground gas line to fuel the fire. So instead I engineered this version. It looks just like the one online, but it can be easily moved by two people and it doesn't need a remote gas supply. Best of all, it can be completed in a weekend and is suitable for even a beginning builder.

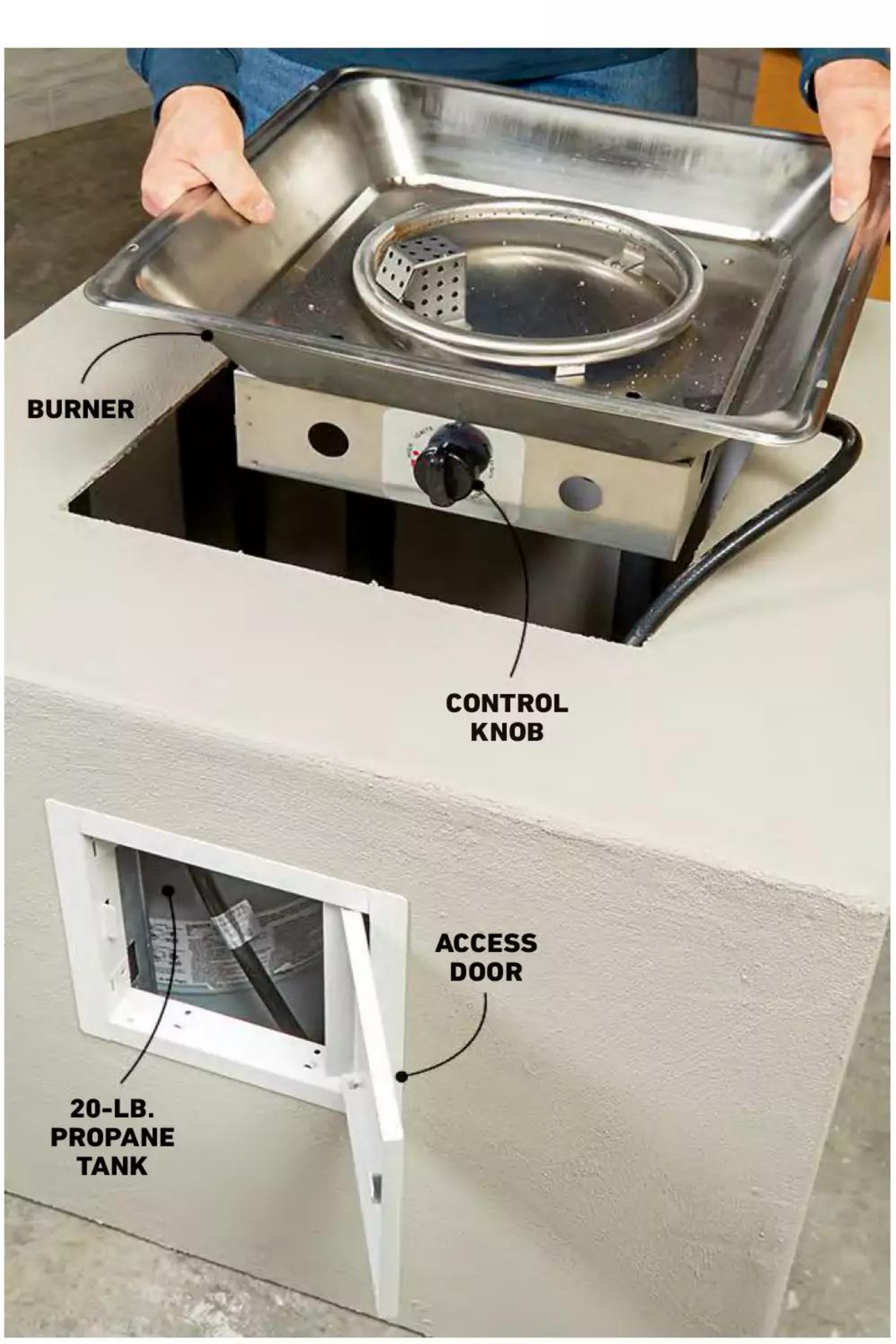
This project involves mostly cutting parts and driving screws, but it does include some materials and methods that might be unfamiliar to you:

Steel studs: These are the best choice for the inner structure of the box. Unlike wood, they're unaffected by heat and humidity. If you haven't worked with steel studs before, don't worry—you'll probably find them easier than conventional lumber. Note: Steel studs in contact with soil will eventually rust away, so the box base is pressure-treated wood.

Backer board: Normally used under ceramic tile, backer board forms the outer shell of the box. I used ¼-in.-thick panels made from lightweight magnesium oxide. Any exterior-rated backer is fine, except versions that have a foam core, which may not stand up to heat.

The fuel and flame system: Propane burners are available online in various sizes and shapes. I used a 19 x 19-in. stainless steel version with a built-in igniter (search online for "AZ GSF burner"). The burner connects to a standard 20-lb. propane tank, which provides about 20 hours of use.

Some burners have a control panel that can be mounted on the exterior of the fireplace. My burner didn't, so I installed an 8 x 8-in. stainless steel

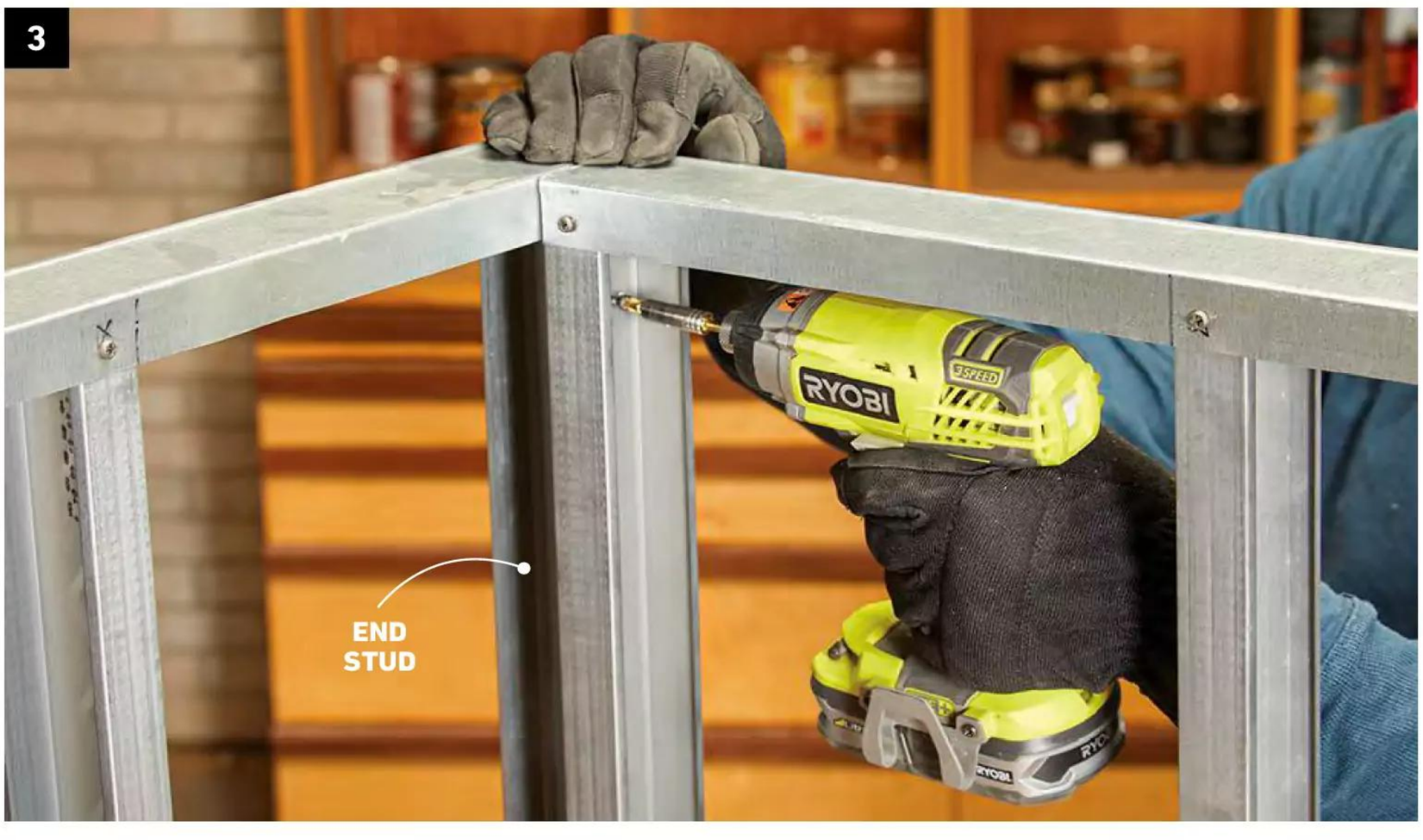


What It Takes

Time	Cost	Skill Level
1 to 2 days	$350	Beginner

Tools

- Saw
- Drill/driver
- Metal snips
- Rasp
- Basic hand tools
- Paintbrush



access door (Acudor ED-2002), gluing the door in place with construction adhesive.

Decorative "fire pebbles" fill the burner tray. To protect the burner from rainwater and other elements when not in use, I applied foundation coating to a leftover scrap of backer board.

1 BUILD FOUR WALLS
Slip each stud into the tracks, clamping them into place with locking pliers. Drive screws on one side of the wall only. Place the end studs with the open side facing inward.

2 ASSEMBLE THE BOX
Build a base from pressure-treated 2x4s and screw the walls to it. Make sure the screw heads on each wall face into the box. A layer of window flashing tape protects the steel from the corrosive chemicals in treated wood.

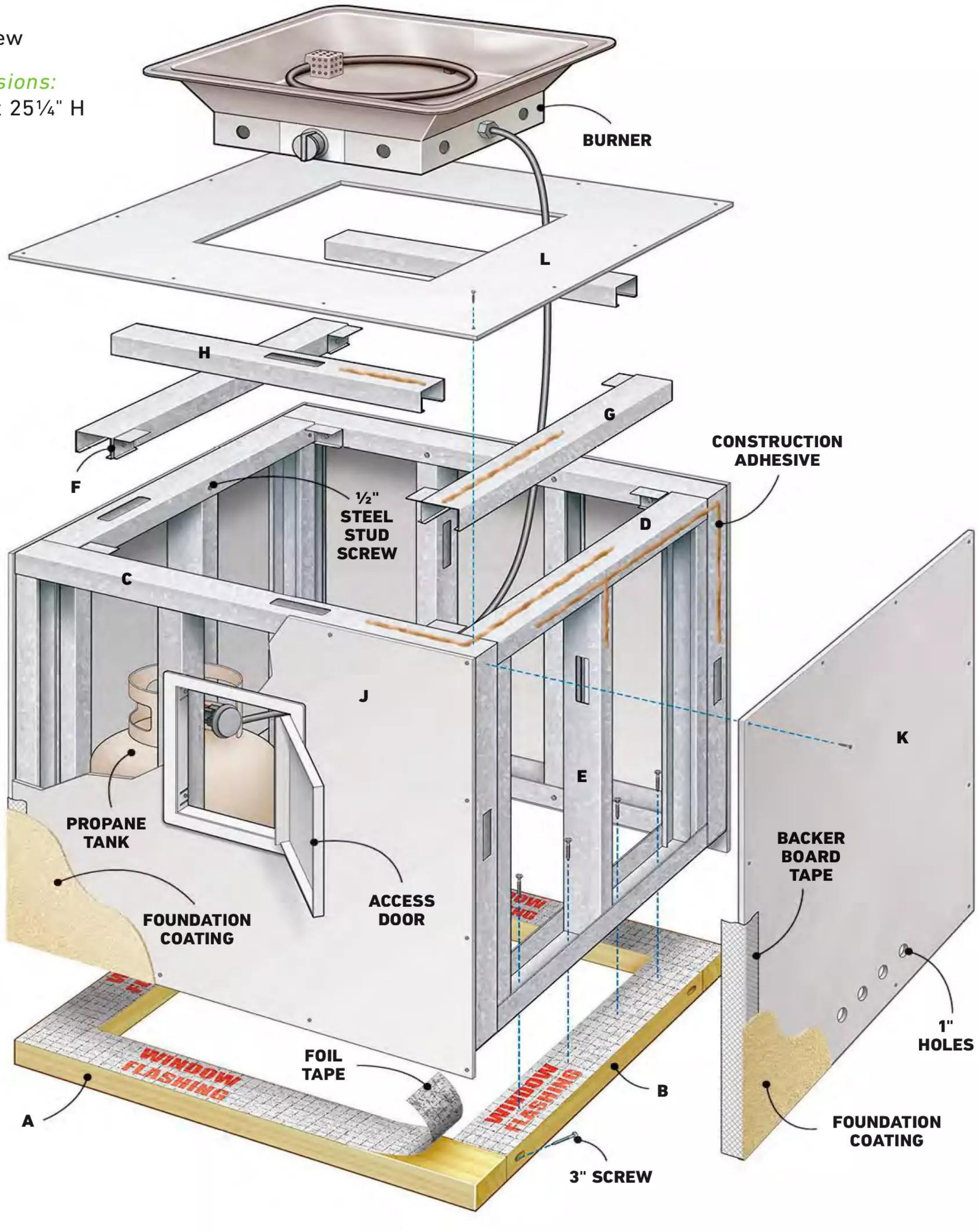
3 JOIN THE WALLS
Align each corner of the box carefully so the adjoining end studs form a perfectly flat surface. Then screw the walls together at the end studs.

4 ADD TOP SUPPORTS
To reinforce the top of the box, add steel studs inside the upper tracks. Set the supports on brackets screwed to the tracks or adjoining supports. Make the brackets from leftover studs. No need to screw the supports to the brackets; adhesive will

TMB STUDIO

Figure A
Project Overview

Overall Dimensions:
32" W x 32" L x 25¼" H

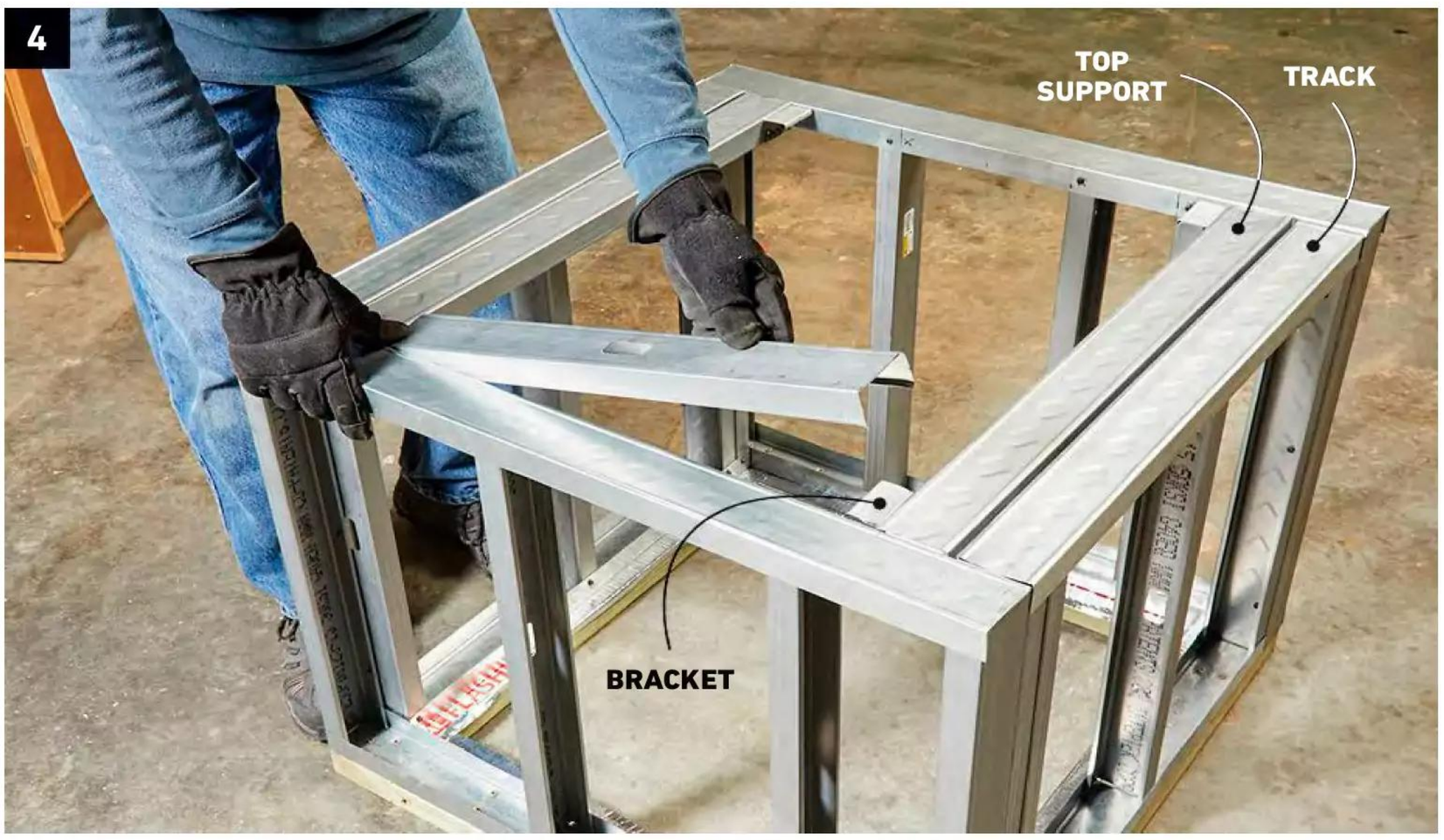


Cuts

Key	Qty.	Dimensions	Part	Material
A	2	2x4 x 31½"	Base frame	Treated
B	4	2x4 x 24½"	Base frame	Treated
C	4	2x3 x 31½"	Frame top/bottom	Steel track
D	4	2x3 x 26½"	Frame top/bottom	Steel track
E	16	2x3 x 23½"	Frame side	Steel stud
F	8	2" x 1½"	Bracket	Steel stud
G	2	2x3 x 26½"	Top support	Steel stud
H	2	2x3 x 21½"	Top support	Steel stud
J	2	24¾" x 31½"	Side	Backer board
K	2	24¾" x 32"	Side	Backer board
L	1	32" x 32"	Top	Backer board

Materials

Item	Qty.
½" steel stud screws	
1¼" and 3" coated deck screws	
1¼" backer board screws	
2x3 x 10' steel studs	5
2x3 x 10' steel track	2
2x4 x 10' treated	1
3' x 5' x ¼" backer board panels	3
Construction adhesive	3 tubes
Backer board mesh tape	
Foundation coating	
Window flashing tape	



secure them when you add the backer board top.

5 SKIN THE BOX Apply plenty of construction adhesive to the wall framing, then screw on the backer board. Cut an access door hole and ventilation holes after the backer board is in place.

NOTE: Ventilation is essential: A gas leak would fill the box with propane, and that's a potential explosion. I used a hole saw to bore four 1-in. holes on two sides of the box, so they would be hidden by my deck but still let leaked propane escape.

6 ROUND THE CORNERS Using a rasp or a coarse file, round all the corners of the box. Rounded corners look better and are less likely to chip.

7 COAT THE BOX Dust off the box and apply mesh tape to the corners. Then brush foundation coating over the tape. The tape may not stay in place for long, so apply the coating quickly.

NOTE: Foundation coating is like a thick paint mixed with fine sand, so it gives the look of concrete without the weight and backbreaking labor. I used Flex-Coat, which is available in various colors.

Also dab foundation coating over the screw heads. Then apply two coats to the entire box. When the coating dries, you're ready for a fire!

TMB STUDIO

Classic Backyard Game

Easily make your own version of this tailgating and party favorite with just a couple of tools

BY *FAMILY HANDYMAN* EDITORS

Sometimes just sitting and chilling in your backyard is plenty of fun. But when you want a little more activity, whether for kids or adult guests, bringing out a game is a great idea. If your group is into puzzles, give this giant version of a popular tabletop game a try. The supersize blocks raise the stakes and turn it into an outdoor activity everyone can get in on.

1 CUT THE 2x4s

Use a miter saw, circular saw, jigsaw or (if you are feeling extra strong) handsaw to cut six 8-ft. 2×4s into fifty-four 10½-in. boards. If you use a miter saw, clamp a scrap piece of wood as a stop block onto the fence and create a consistent guide so you won't have to keep on measuring.

2 SAND THE EDGES

Use 180-grit sandpaper on any type of sander to soften the edges and get rid of any splinters or rough edges.

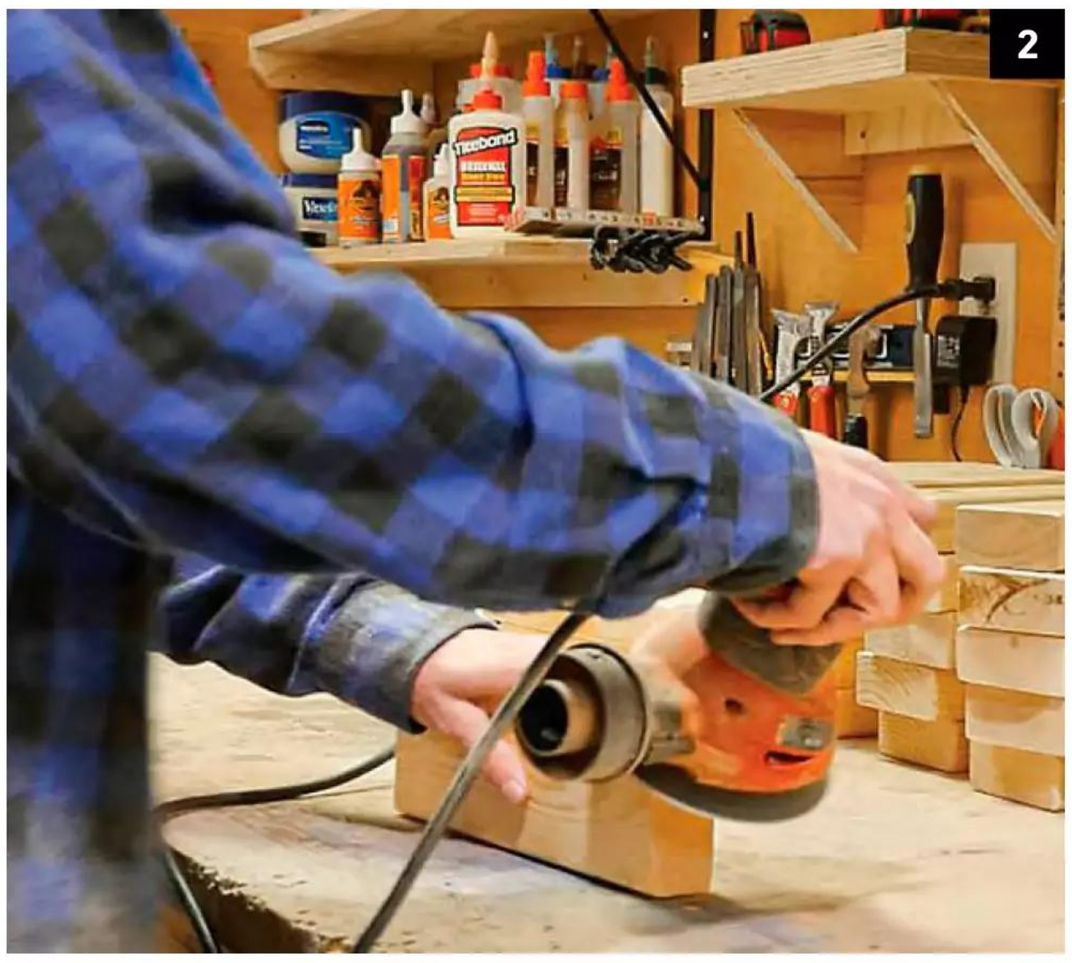
3 STAIN THE BOARDS (OPTIONAL)

If you're going to set up the game outdoors, give the boards a coat of stain. That will help protect them from the elements, just in case someone forgets to put them away for the night and it rains.

4 STACK AND PLAY

Line up three pieces next to one another, then line up another three pieces on top, rotated 90 degrees. Keep this pattern going until you've used up all the pieces to create a wow-worthy tower. Then, it's time for the anticipation. When it's your turn, you must select a wooden piece that can be transferred from its location to the top of the tower—without causing the whole thing to fall. Challenge your family or friends and see who is the puzzle master.

1



2

4

TMB STUDIO

DIY Ring Toss

A simple build that blends basic woodworking with classic family fun

BY JOE CRUZ

Turn family game night into a competitive outdoor match of ring toss! Easy enough to build as a team (include the kids in your life in the building process), this quick-to-make project will offer hours of outdoor fun.

Tools

- Cordless drill/driver
- Drill bit set
- Handsaw
- Utility knife

Materials

Item	Qty.
1" x 3' dowel rod	
½" rope	7 ft.
1x3 x 3' pine board	
¾" x 1" wood beads	4
Peel-and-stick numbers	
Sandpaper	
Wood glue	
Wood sealer	

1 CUT AND SAND THE PIECES

Using a handsaw, cut the pine 1×3 into two 2½-in. pieces and two 15-in. pieces. Cut the dowel rod into four 6-in. pieces and one 9-in. piece.

Sand each piece with 220-grit sandpaper to remove any sharp corners and edges.

2 MEASURE AND MARK THE BOARDS

Along the centerline of each 15-in. board, make a mark 1¼ in. from each end and a third mark 7½ in. from one end (see Figure B).

PRO TIP: For accuracy, use an adjustable square set to 1¼ in. for this step.

3 DRILL THE HOLES

Drill a 3⁄16-in. pilot hole at each of the six marks you made in step 2.

Place the two 2½ x 2½-in. pine blocks under one of the 15-in. boards, flush with the ends and sides. Drill through the pilot holes on each end, into and through each block.

Using a 1-in. spade bit or Forstner bit, drill a ¼-in.-deep hole at all three pilot holes on the same 15-in. board. This will be the top board on your ring toss game.

On the bottom board, drill a ¼-in.-deep hole at the pilot holes on each end, leaving the center pilot hole untouched.

PRO TIP: With a marker or piece of tape, put a mark on your spade bit ¼ in. up to show how deep to drill your hole.

4 DRILL THE DOWELS

On the top board, insert 6-in. dowels into the holes on each end and a 9-in. dowel in the center hole. On the bottom board, insert 6-in. dowels into the holes on each end.

Use a ⅛-in. drill bit to drill into each dowel from the bottom of the boards through the pilot holes.

5 GLUE THE DOWELS AND BLOCKS

One by one, pull out each dowel, apply a small amount of wood glue to the end, and insert the dowel back into its hole.

Apply a small amount of wood glue to the top of each 2½ x 2½-in. pine block.

Attach the blocks to the underside of the top board, using 2¼-in. screws through the pilot holes on the bottom of the blocks.

6 ASSEMBLE THE TOP AND BOTTOM BOARDS

Start a 2¼-in. screw into the center pilot hole from the underside of the bottom board so that it sticks out ⅛ in. on the top.

Apply a small amount of wood glue to the top of the board around the center pilot hole.

TMB STUDIO

Figure A
Project Overview

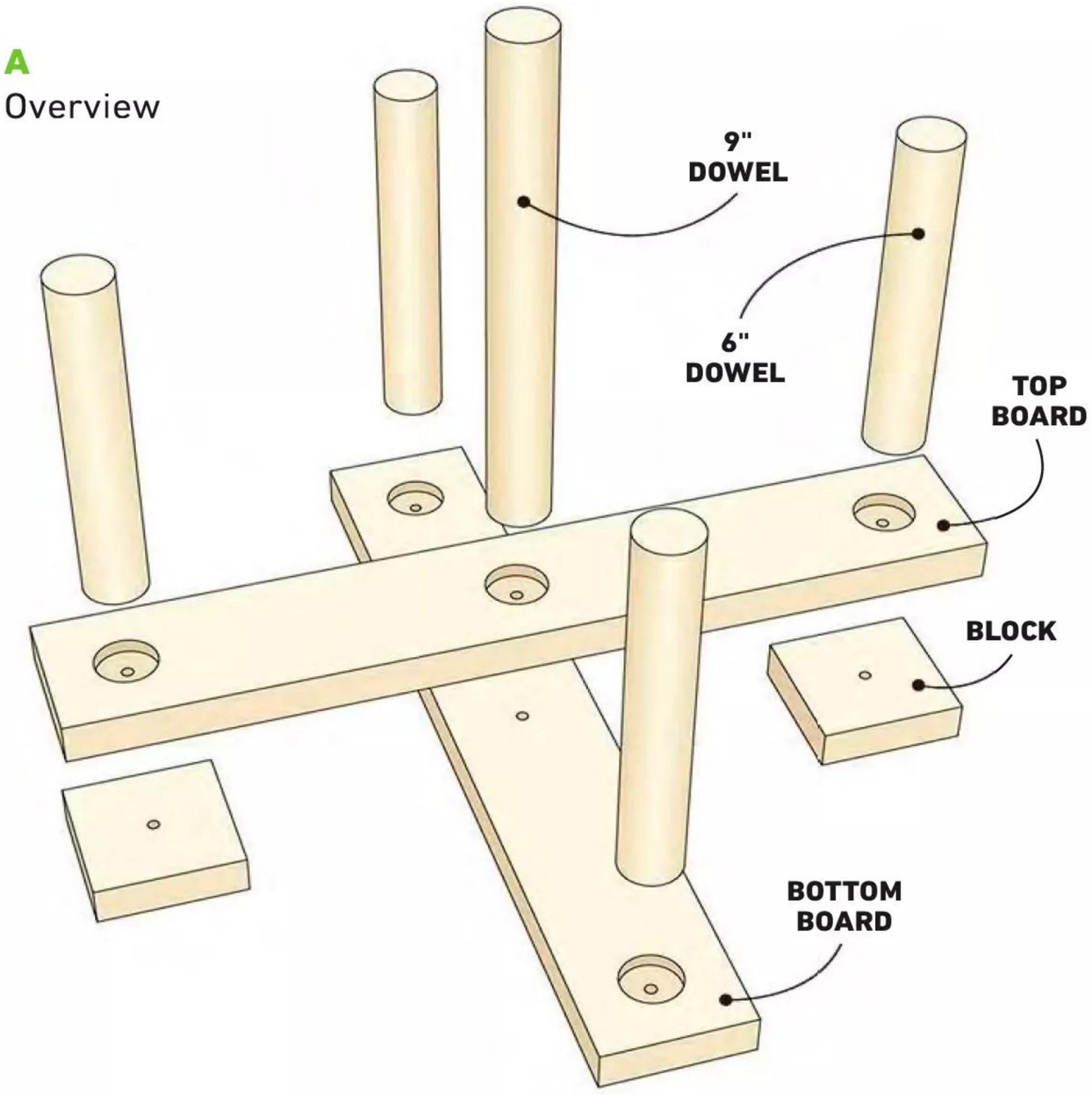
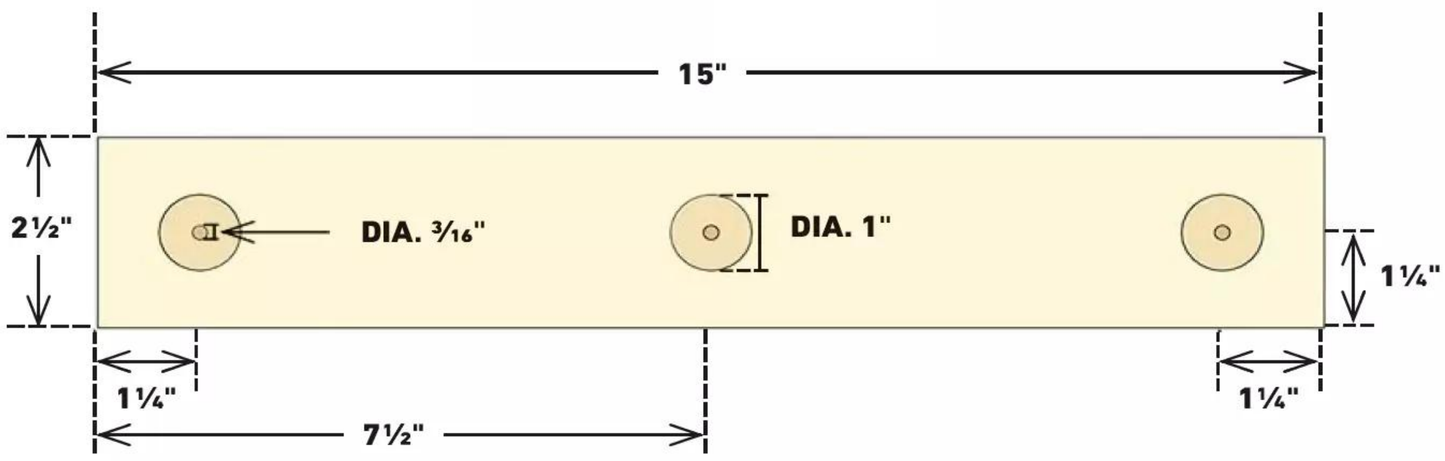


Figure B
Top Board Detail



Make a cross by placing the top board over the bottom board, aligning the screw point with the top board's center pilot hole.

Tighten the screw, securing the top and bottom boards and center dowel together.

7 STICK NUMBERS ON

Place peel-and-stick numbers on the top and bottom boards to assign a point value to each dowel. The tall center dowel should have the highest value; as you play, the lowest-value dowel should be closest to you.

PRO TIP: A pair of tweezers may be helpful for this task.

8 SEAL IT

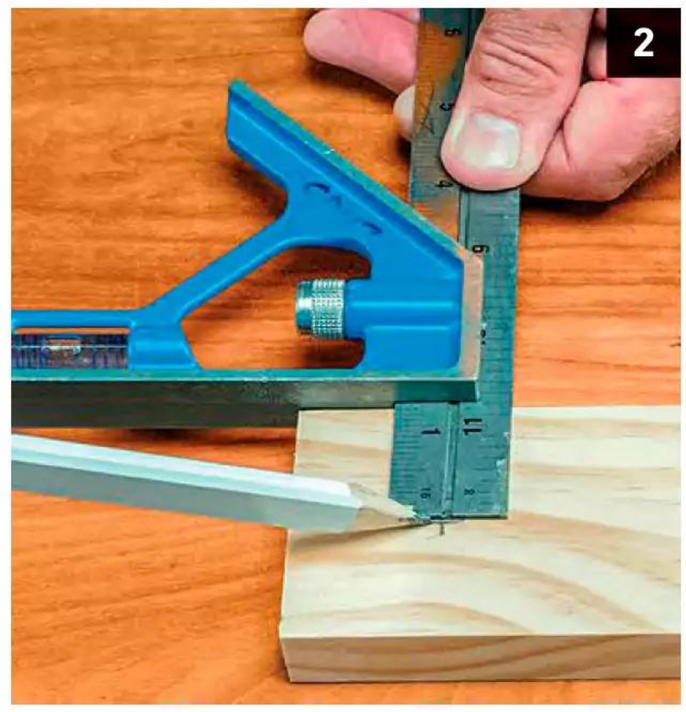
Spray two or three coats of wood sealer on your project, allowing plenty of drying time between coats.

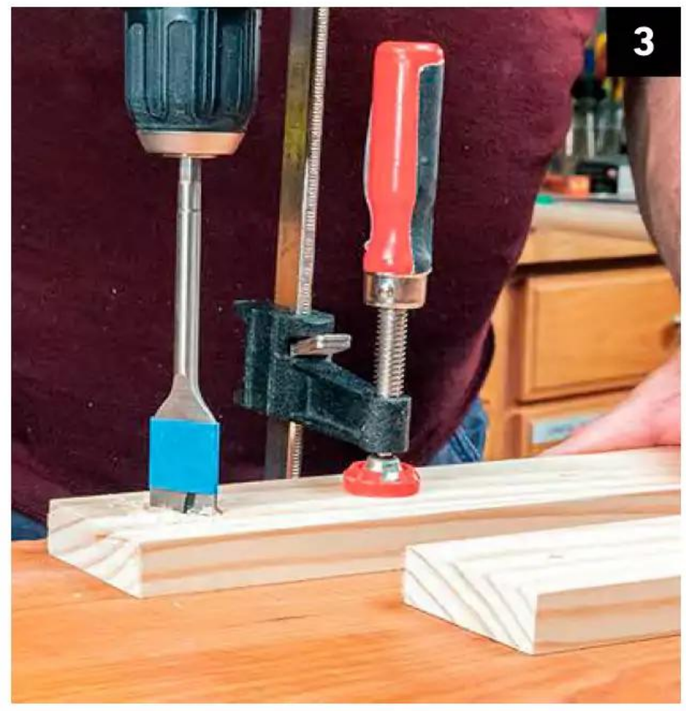
9 MAKE THE RINGS

Cut four 19-in. lengths of rope. Insert one end of the rope halfway into a wood bead, then add a small amount of wood glue into the bead and turn the bead a few times.

Add a little more wood glue into the bead and insert the other end of the rope.

Repeat this three more times. Let the glue dry completely, then get ready to play!





Handy Hints

Try these clever low-effort tricks to make life outside easier—from the garden to the grill

Gutter Deck Planter

Cut a 2-ft. length of vinyl gutter and glue one of the end caps into place with kitchen and bath adhesive caulk. Drill ½-in. drainage holes every 4 in. along the bottom of the gutter. Slide both fascia support brackets onto the gutter and glue the other end cap into place. Screw the planter to the deck rail through the fascia support brackets using galvanized screws.

TMB STUDIO

Slip-Free Drink Holders

To solve the slipping problem with drinks, drill a hole in the arm of an outdoor chair with a 3-in. hole saw. Take two short lengths of heavy-duty strapping, cross them at the bottom and use two-part epoxy glue to attach the straps under the arm. This should hold your drink in place without the risk of creating a mess.

Plant-in-a-Pot Landscaping Design

Here's a clever way to reorganize your garden after seeing how the mature plants look. You'll need a bunch of pots of the same size, so one can nest in another. Put your plants in doubled pots, and then bury them at ground level. Whenever you want a change, lift out the top pot and put in a different one. This method is also really slick for bringing plants indoors over the winter.

Easy-Flip Burgers

Run a cut onion across the grate of your barbecue grill. The natural anticoagulant in the onion makes the surface less sticky for meats, so your burgers will be easier to flip.

Wine Cork Fire Starters

Fill a Mason jar with wine corks and rubbing alcohol, and let the corks soak. The corks will burn fairly well in a few days, but for the best results, soak them for a week. Be sure the corks are natural, not synthetic.

An old golf bag on a cart is perfect for storing and hauling garden tools. It'll get all your tools to the garden in one trip!

Share your Handy Hints with us at FamilyHandyman.com/submissions.

Great Goofs

Whether you're enjoying your outdoor space or working to improve it, blunders are bound to happen

Hot Tub Dash

My wife and I had installed a new hot tub in our yard and were eager to use it. On a very dark night, we decided to go for an inaugural skinny-dip. We got halfway to the tub when the motion sensor fixture flooded the area with bright, show-you-in-all-your-glory light. We ran back toward the house, falling in a heap on the ground in our hurry to get there. We don't forget that light anymore—or our towels! —**John McCarthy**

Lattice Lesson Learned

After finishing my porch deck, I decided it needed a skirt to hide the ugly footings. After cutting a couple of 4 x 8-ft. lattice sheets to size, I crawled underneath the deck to nail them up. Relieved that the job was nearly done, I started to wiggle out through the last open portion—only to realize it was too small. I had jailed myself in! Fortunately I was able to pull free a good-size section and make my hasty escape before the neighbors could catch the show. —**Randall Deane**

STEVE BJORKMAN

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